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Tetra Tech, inc
Sand Coulee Coal
Maintenance
Project, DSL-AMRB
No. 94-M08, Sand
Coulee and
Centerville,

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FINAL REPORT
SAND COULEE COAL MAINTENANCE PROJECT
DSL - AMRB NO. 94-M08

Sand Coulee and Centerville
Cascade County, Montana
North Central

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Sand Coulee and Centerville
Cascade County, Montana
North Central

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2969 Airport Road
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1.0 INTRODUCTION

1.1 PROJECT/SITE DESCRIPTION

The construction sites for work performed under this contract are located in Section 13, T.19N, R.4E. and Section 19, T.19N., R.4E. The sites are located in the towns of Sand Coulee and Centerville respectively, in Cascade County, Montana.

1.2 SITE PROBLEMS AND PROJECT OBJECTIVES

This project encoupases four separate construction sites. Each site has a different problem, and therefore separate objectives. The four sites are as follows:

- Romanchuk Residence
  The Romanchuk residence was having a recurring problem with acid mine drainage infiltrating into the basement. The objective of this project was to raise the elevation of the basement floor above the elevation of the groundwater table. This objective was met by placing a flowable fill concrete mixture into the basement. This reduced the basement to a crawl space only, but increased the floor elevation to an elevation higher than that of the ground water.

- Nelson Mine Slope
  The Nelson Mine Slope was unable to promote vegetative growth due to acid mine drainage from the old Nelson Mine. A large area of previously reclaimed soils had been affected by acid mine drainage (AMD) virtually eliminating any vegetation and allowing extreme slope erosion.

  To control the AMD a subsurface drain system was installed to intercept acidic ground water. This water was then routed to an existing slope drain already in place from the work completed in 1988.

  To promote vegetative growth two feet of contaminated slope material was removed from the mine slope, and was amended by mixing lime with the contaminated soil. The amended soil was then placed back on the mine slope and covered with 6-inches of topsoil. On this seed bed, a mixture of selected plants were seeded and mulched.

- Sand Coulee Firehall Slope Stabilization
  The hillside behind the Sand Coulee Firehall consisted of a steep, open, unvegetated hillside. The hillside was regraded to be more uniform and imported fill was added where necessary and the slope covered with topsoil and seeded to grass.

- Miners Park, Centerville, Montana
  The Miners Park parking lot was surfaced with a combination of coal mine tailings and clay. Improvements to the surface included regrading the existing surface, and compacting the surface where necessary, and placement of a imported ¾ inch crushed top surfacing material. After placing the gravel the material was compacted and tested for compaction.

2.0 RESPONSIBLE PARTIES

2.1 CONTRACTOR

DeBuff Drilling Co. was awarded the contract as the general contractor for all phases of the project.

2.1.1 Subcontractor

2.1.2 Supervisors

A. DeBuff Drilling Co.
Rod DeBuff - Project Manager
Vernon DeBuff - Job Superintendent

2.2 ENGINEERS

Engineering services for design and inspection were supplied by the following:

A. Tetra Tech, Inc.
2969 Airport Road
Helena, MT 59601

B. NTL Engineering & Geoscience, Inc.
1505 14th Street S.W.
P.O. Box 3269
Great Falls, MT 59403-3269

2.2.1 Managers

A. Tetra Tech, Inc.
Earl F. Griffith - Hydrogeologist/Soil Scientist

B. NTL Engineering & Geoscience, Inc.
Kenneth Munski - Sr. Material Engineer

2.2.2 Inspectors

A. NTL Engineer & Geoscience, Inc.
John Ayers - Staff Engineer

B. Tetra Tech, Inc.
Earl F. Griffith

2.3 STATE OF MONTANA ABANDONED MINE RECLAMATION BUREAU

AMRB Project Manager - John Koerth

3.0 DESCRIPTION OF RECLAMATION CONTRACT

3.1 BIDDING AND PRE-CONSTRUCTION ADMINISTRATION

3.1.1 Advertisement

Contract documents were available for viewing at the Dept. of State Lands, Reclamation Division/ Abandoned Mine Reclamation Bureau in Helena, NTL Engineering & Geoscience, Inc. in Great Falls, Tetra Tech, Inc. in Helena, as well as eight Builders Exchange and Contractors Association offices around the state.

3.1.2. Pre-Bid Conference

A pre-bid conference was held for perspective Bidders on Thursday, October 6, 1994. The conference was convened at 1:00pm at the Sand Coulee Fire Hall in Sand Coulee, Montana. A field tour of the project sites was provided.

3.1.3 Bid Opening

Sealed bids received before 3:00pm on Thursday, October 13, 1994 were opened and read aloud at the time. Bids were opened by the Department of State Lands in their offices at 1625 Eleventh Avenue, Helena, Montana. Bidders and other persons properly interested in the bid opening were permitted to attend.

3.1.4 Award

The contract was awarded to DeBuff Drilling Co., Inc. of Lewiston, Montana by MT DSL on October 14, 1994. DeBuff Drilling Co., Inc. was awarded the contract on the basis of being the lowest qualified bidder. DeBuff Drilling signed the Notice of Award on October 27, 1994.

3.1.5 Agreement

On November 14, 1994 the Agreement between the State of Montana Department of State Lands, and DeBuff Drilling Co., Inc. was signed. The agreement covered the project entitled Sand Coulee Coal Maintenance Project Cascade County, MT, DSL - AMRB 94-M08.

3.1.6 Notice to Proceed

On November 10, 1994 a Notice To Proceed was given to DeBuff Drilling Co., Inc. by the State of Montana Department of State Lands for the Sand Coulee Coal Maintenance Project, directing them to commence work by no later than November 14, 1994.

3.2 CONSTRUCTION ADMINISTRATION

3.2.1 Preconstruction Conference

On November 14, 1994 a preconstruction conference for the Sand Coulee Coal Maintenance project was held at the Great Falls, MT office of NTL Engineering & Geoscience, Inc. Representatives of the Montana Department of State Lands, Tetra Tech, Inc., DeBuff Drilling Co., and NTL Engineering & Geoscience, Inc. were present. The preconstruction conference covered project objectives, and scheduling.

3.2.2 Start Up

Construction began on November 28, 1994 at the Nelson Mine Slope, and Romanchuk Residence job sites.

3.2.3 Shut Downs

Work continued until the weather made conditions unfavorable for construction on January 5, 1995. Work began on February 6, 1995 and continued sporadically until the construction was completed on March 17, 1995.

3.2.4 Substantial Completion

The certificate of Substantial Completion was submitted after site inspection by the engineer to the contractor on April 11, 1995.

3.2.5 Final Approval and Payment

Final payment was made following the third change order adjusting material costs on May 1, 1995.

3.3 EQUIPMENT AND METHODS

3.3.1 Type, Make, Model

Type	Make	Model
Track Hoe	John Deere	790 D-LC
Bull Dozer	Caterpillar	D6
Road Grader	Caterpillar	D42
Front End Loader	Caterpillar	980C
Back Hoe	Caterpillar	416
Smooth Drum Roller	Ray - Go	

3.3.2 Description

A. Nelson Mine Slope

The subsurface drainline trench was excavated using the 790D-LC track hoe, and the caterpillar 980C front end loader was used to transport and place drain rock. The caterpillar D6 dozer was used to push mine spoils off of the slope, and push up the amended soils. The John Deere 790D-LC track hoe was used to mix the spoils with lime, and place the amended soils on the steeper areas of the slope. The Caterpillar 980C front end loader was used to haul amended soils, and cover soils onto the mine slope. The John Deere 790D-LC track hoe was also used to crimp the mulching straw on the mine slope whereas a standard tractor could not operate due to slope steepness.

B. Sand Coulee Firehall Slope Stabilization

The John Deere 790D-LC track hoe was used to flatten the grade of the slope behind the Firehall, and to make final grade adjustments to the coversoils. The Caterpillar D6 dozer was used to help reshape the slope, and place coversoils. The John Deere 790 D-LC track hoe was also used to crimp straw mulch on the slope.

C. Coal Miners Memorial Park

The Caterpillar D42 patrol was used to remove existing vegetation from the parking lot surface, and to spread ¾ in crushed top surfacing over the parking lot. The Ray - Go smooth drum roller was used to compact the ¾ inch crushed top surfacing material.

3.4 PLANNING AND DESIGN

3.4.1 Description

The planning phase of the project consisted of complete site investigations, and determination of site specific problems and possible solutions. In the planning phase several investigation reports were prepared by Tetra Tech and NTL Engineering & Geoscience, Inc. which outlined site specific problems, and recommendations. These reports were submitted to the Montana Department of State Lands, Abandoned Mine Reclamation Bureau.

The Design phase of the project consisted of the preparation of Bid and contract documents. The Design phase also included the preparation of plans and specifications from the Engineering Recommendations.

3.4.2 Problems

A. Nelson Mine Slope

The Nelson Mine Slope was experiencing topsoil erosion from a major portion of the slope surface and a lack of vegetation on the slope. Emergence of acid mine drainage from a mid slope seep destroyed vegetation and was causing rill erosion on the slope.

B. Sand Coulee Firehall Slope Stabilization

The Firehall slope was experiencing some minor slope stability problems and consisted of coal waste materials (primarily angular rocks) that did not support vegetation. In addition, the steep unstable slope was sloughing rocks off the slope which would roll down slope into the newly constructed firehall.

C. Romanchuk Residence

The Romanchuk Residence was experiencing ground water infiltration into the residence basement. The acidic nature of the ground water caused corrosion of residence's hot water heater, the sump pump, and the decay of the wooden structural floor supports. It was determined that the elevation of basement floor was roughly one foot below the ground-water table.

D. Miners Park Parking Lot

The Miners Park Parking Lot was surfaced with coal waste subgrade material only. The subgrade material consisted of silty to clayey sand with gravel mixed with cinders and coal fragments which created an inferior parking surface. These material would become very muddy when wet.

3.4.3 Consideration

A. Nelson Mine Slope

In order to prevent further erosion two recommendations were made. The first recommendation was to prevent erosion by capturing the acidic mine run-off in subsurface drains to be located at the mid slope. The second recommendation was the amend the contaminated soils on the mine slope so vegetation could be promoted. To ensure vegetation success, topsoil was to be placed over amended soils to ensure successful grass growth.

B. Sand Coulee Firehall

In order to prevent future slope stability problems on the Firehall slope it was recommended that the grade of the slope be reduced, the existing bench be widened, and the reshaped slope revegetated.

C. Romanchuk Residence

Two methods of controlling ground water infiltration into the Romanchuk basement were considered. The first method was to install an exterior subsurface drain system that would daylight in the vicinity. The second option was to partially fill the basement, with a concrete flowable fill. By filling the basement the slab grade could be raised above the ground water elevation. The flowable fill option was selected as the most cost-effective option to solve the problem due to concerns of creating a new point source of acidic run-off.

D. Miners Park Parking Lot

A ¾ inch crushed surfacing material was selected for the parking lot surface.

4.0 COST SUMMARY

4.1 SUMMARY OF PAY ITEMS

4.1.1 Quantities Used

Description	Contract Estimate	Actual Quantity
Salvage and Replace Coversoil	700 cy	190 cy
Unclassified Excavation Firehall	100 cy	94 cy
Imported Fill Soil	100 cy	102 cy
Remove & Replace Fences	750 ft	705 ft
Remove, amend & Replace Subsoils	4470 cy	4358 cy
Imported Topsoil	1330 cy	1734 cy
Fertilize Seed & Mulch	1.6 acres	2.0 acres
Nelson Mine Seep Underdrain	600lf	600 lf
Nelson Mine Underdrain Connector Pipe	180lf	180 lf
Nelson Mine Drop/Manhole	1	1
Flowable Fill	50 cy	50 cy
Centerville Parking Lot ¾ in. Surfacing	2570 sy	2517 sy
Straw Bales for Erosion Control	180	223

4.1.2 Change Orders

Change Order No. 1 1000 lf Type F-4M Fence

Change Order No. 2 40 ft. of underdrain and two double panels for the type F-4M fence.
Change Order No. 3 Final adjustment to material quantities and add-ons for increased topsoil use and additional seeding.

4.1.3 Summary of Costs

A. Cost Per Site

- Nelson Mine Slope $ 79142.00
- Sand Coulee Firehall Slope Stabilization $ 1562.00
- Romanchuk Residence $ 7500.00
- Centerville Parking Lot $ 10068.00

4.1.4 Cost Per Yard

Description	Contract Unit Cost	Contract Cost	Total Cost
Unclassified Excavation Firehall	4.00/cy	$400.00	$376.00
Salvage and Replace Coversoil	4.00/cy	$2800.00	$760.00
Imported Fill Soil	8.00/cy	$800.00	$816.00
Remove, Amend, and Replace Subsoils	7.00/cy	$31290.00	$30506.00
Import Topsoil	15.00/cy	$19950.00	$26010.00
Flowable Fill	120.00/cy	$6000.00	$6000.00
Centerville Parking Lot ¾ Crushed Surfacing	4.00/sy	$10280.00	$10068.00

4.1.5 Cost Per Lineal Foot/Item

Description	Contract Unit Cost	Contract Estimated Cost	Actual Cost
Remove & Replace Fences F-4M	2.00/ft	$1500.00	$1410.00
Nelson Mine Seep Underdrain	18.50/ft	$11100.00	$11100.00
Nelson Mine Underdrain Connector Pipe	6.00/ft	$1080.00	$1080.00
Nelson Mine Drop/Manhole	2000.00/ea	$2000.00	$2000.00

4.1.6 Cost Breakdown of Lump Sum Items

- Mechanical Electrical & Structural Romanchuk Residence $1500.00
- Mobilization $5000.00

4.1.7 Cost Breakdown of Mobilization Expenses

• Nelson Mine Slope	80.5%	$4025.00
• Romanchuk Residence	7.6%	$ 381.50
• Sand Coulee Firehall Slope Stabilization	1.6%	$ 81.00
• Centerville Parking Lot	10.3%	$ 512.00

4.1.8 Change Orders

- Change Order Number 1
  1000ft of type F-4M fence 3.75/ft $3750.00

- Change Order Number 2
  40 ft of interception underdrain $3962.00
  Two double panels Type F-4M

- Change Order no.3. Adjustment to costs of material and add ons for additional topsoil, area to seed, and straw bales.
  Total Adjustment: $4242.00

4.1.9 Consultant Cost Breakdown

DSL AMRB 94-012 TO-04

Tetra Tech Personnel	Hours Budgeted	Hours Used
E. Griffith	77	109
D. Martin	76	20
R. Laskowski	0	3
C. Arnold	4	4
N. Podolinsky	20	19
Totals	**177**	**155**

Estimated labor base and fringe and overhead. 8311.00
Total labor base and fringe and overhead (through May 28, 1995). 8225.00

From the hourly breakdown, Tetra Tech to May 28, 1995 was under on hours and nearly on target as to the base salary plus fringe and overhead. ($8311.00 est. vs. $8225 actual).

However, NTL, in charge of most construction oversight, incurred a 32% overrun in hours expended. In estimated vs. actual costs the dollar amounts for labor base plus fringe and overhead were $ 12,989.00 estimated vs. $ 16,996.14 actual. Part of the overrun was due to change orders, part to an extended construction period, part to other work not specific to this site, and part to additional, unplanned materials testing. Also, because the project went from investigation, to bid document preparation to oversight in a very short period, a significant amount of labor which probably should have been billed to the investigation carried over to Task Order #4. However, once the overrun was detected, the Subcontractor was told to cease all work, which they did immediately.

NTL Personnel	Hours Budgeted	Hours Used	Over/(Under)
G. Quinn	49	0	(49)
K. Munski	64	165.5	101.5
R. Brown	111	19.5	(91.5)
T. Polich	50	26.5	(23.5)
J. Ayres	60	215.0	151.5
K. Venetz	0	0	0
J. DeBolt	0	1.5	1.5
M. Chapman	0	13.0	13
Totals	**334 hours**	**441.0 hours**	

Invoice Number	Invoice Dates	Labor Base	G&A/Ovrhd/Fringe
3822	10/14/94	2140.40	4789.94
4065	10/01/94 - 12/15/94	1220.00	2678.55
4082-1	12/16/94 - 2/28/95	3160.35	7255.62
4211	3/01/95 - 4/15/95	513.85	1136.35
Totals		**7034.60**	**15860.46**

Total Actual Labor and Overhead	22895.06
Total Estimated Labor and Overhead	17171.00
Amount Over	(+)5724.06

Invoice Number	**Travel**
3822	149.80
4065	102.90
4082-1	501.90
4211	44.80
Total Actual Travel Costs	799.40
Total Estimated Travel Costs	328.00
Amount Over	471.40

Concurrent with the additional labor was a large increase in travel costs - more than double the estimate.

Consultant costs as of June 16, 1995 were at $41,377.13. Of that total the subcontractor (NTL) costs totaled $32,636.18 or 44.8% over the original estimate. Tetra Tech has accrued costs of $11,740.95 for an overrun of about 19.7%. Combined, the cost overruns are at 36.2%.

A comparison of actual construction cost's versus consultant costs to date shows consultant costs to be approximately 40% of construction ($111,014.00 construction vs. ~ $45,000.00 consultant). No attempt was made to differentiate the field construction oversight costs from Administrative/Design Engineering costs.

5.0 PROJECT SUMMARY

Although the work on this site was scheduled for completion in 30 days, cold weather precluded achieving this goal. In spite of the weather controlled schedule, the reclamation was completed before the spring rains thus ensuring a good first season greenup.

Problems encountered during this projects specific subtasks are noted below:

Romanchuk Residence

- Ordering and finally receiving a water heater of proper dimensions took far longer than anticipated.
- The flowable fill, as a mass, achieved acceptable strength only after an extended period due to the cold weather.

Nelson Mine Hillslope

- Upon completion, an additional area of seepage was noted requiring the installation of more underdrain laterals.
- Liming of the spoils was hampered by the material being frozen into fairly large blocks.
- The contractor did not have equipment suited to steep slope seeding and mulching. This would be an appropriate point to bring out during the initial pre-bid site visit.
- The straw used for mulching did not crimp well, but shattered into segments 4 to 6 inches in length. This ultimately affected the erosion protection on the slope from both wind and precipitation.

Firehall Slope

- No significant problems were encountered during this phase of the reclamation.

Miners Park Parking Lot

- No problems specific to construction were noted. However, future jobs such as this should have money budgeted for density testing to ensure the contractor is meeting minimum AASHTO specifications.

The job's overall progress was hindered by the weather and forced into much longer construction timeframe. This schedule did not affect the actual construction but did add significantly to the Consultant oversight required for a job this size.

Some of the positive features on this project include:

- Cold weather provided stable slope for excavation of the underdrain trench.
- Straw crimping using the trackhoe with the crimper mounted on the bucket was an awkward but effective means of ensuring contour crimping.
- Use of the flowable fill appears to be a simple cost effective means of dealing with AMD ground-water problems and has potential to be used elsewhere.

ATTACHMENT 1

BID TABULATIONS

BID TABULATIONS				ENGINEER'S ESTIMATE		ENVIROCON, INC.		PEC INC.			
Item Number	Estimated Quantity	Unit	Description	Unit Price	Total Price						
1.	1	1	Mobilization	2000.00	2,000.00	31300.00	31,300.00	8000.00	8,000.00		0.00
2.	700	CY	Salvage & Replace coversoil in operations area to nominal 6" depth	3.00	2,100.00	10.50	7,350.00	6.00	4,200.00		0.00
3.	100	Cy	Unclassified Excavation (cut, fill and grade at Fire Hall)	4.00	400.00	4.60	460.00	10.00	1,000.00		0.00
4.	100	Cy	Imported fill soil (fill at Fire Hall slope)	15.00	1,500.00	10.60	1,060.00	10.00	1,500.00		0.00
5.	750	Foot	Remove and Replace fences (Type F-4M)	1.50	1,125.00	22.00	1,500.00	10.00	7,500.00		0.00
6.	4470	CY	Remove, amend & replace subsoils on Nelson Mine slope	9.50	42,465.00	14.40	52,299.00	10.00	44,700.00		0.00
7.	1330	CY	Import topsoil & place on Nelson Mine slope & Fire Hall slope	18.00	23,940.00	22.00	29,260.00	20.00	26,600.00		0.00
8.	1.6	Acre	Fertilize, seed and mulch (Nelson Mine slope & Fire Hall slope)	3900.00	6,240.00	2900.00	4,640.00	2500.00	4,000.00		0.00
9.	600	LF	Nelson Mine seep underdrain (incl. pipe, aggregate & geotextile)	35.00	21,000.00	35.00	21,000.00	30.00	18,000.00		0.00
10.	180	LF	Nelson Mine underdrain connector pipe/trench	27.00	4,860.00	14.40	2,592.00	20.00	3,600.00		0.00
11.	1	Each	Nelson Mine underdrain connector drop/manhole	2000.00	2,000.00	2350.00	2,350.00	3500.00	3,500.00		0.00
12.	50	CY	Flowable fill for Romanchuk residence basement (incl. materials & placement)	50.00	2,500.00	103.00	5,150.00	150.00	7,500.00		0.00
13.	1	LS	Mechanical, electrical & structural alterations to Romanchuk basement/crawl space (incl. new electric water heater installation)	3000.00	3,000.00	3900.00	3,900.00	5500.00	5,500.00		0.00
14.	2570	SY	Centerville Parking Lot 3/4" crushed top surfacing	5.00	12,850.00	3.00	7,710.00	20.00	12,850.00		0.00
15.	180	Bales	Straw bales for erosion control	1.00	180.00	15.00	2,700.00	5.00	900.00		0.00
					126,160.00		173,271.00		149,350.00		0.00

ATTACHMENT 2

CHANGE ORDERS

ENGINEERING &
GEOSCIENCE, INC.

1505 14th ST. S.W. • P.O. Box 3269 • Great Falls, MT 59403-3269 • (406) 453-5400

RECEIVED
JAN 30 1995
Ans'd.....

January 26, 1995

Tetra Tech, Inc.
2969 Airport Road
Helena, Montana 59601

Attention: Mr. Earl Griffith

Subject: Sand Coulee Abandoned Mine Reclamation Project
Change Order No. 1 for Additional Livestock Control Fencing

Gentlemen:

On November 16, 1994, Mr. John Koerth of the Montana Department of State Lands asked us to initiate a Work Directive Change, and subsequently a Change Order to construct additional livestock control fencing for the referenced project. A Work Directive Change form was completed and submitted on November 21, 1994. The Work Directive Change covered the construction of 1000 feet of Type F-4M fence for livestock control on the Nelson Mine Slope Construction site.

Please find attached CHANGE ORDER NO. 1 which corresponds to WORK DIRECTIVE CHANGE NO 1.

Please feel free to call if you have any questions regarding the change order.

Very truly yours,

John W. Ayers
Staff Engineer

Kenneth D. Munski, P.E.
Sr. Materials Engineer

JWA/KDM/tp
Enclosure

CHANGE ORDER

AIA DOCUMENT G701

OWNER ☐
ARCHITECT ☐
CONTRACTOR ☐
FIELD ☐
OTHER ☐

PROJECT: SAND COULEE COAL MAINTENANCE PROJECT
(name, address) CASCADE COUNTY, MONTANA

TO CONTRACTOR: DEBUFF DRILLING COMPANY, INC.
(name, address) HC 85, BOX 4314
LEWISTOWN, MT 59457

CHANGE ORDER NUMBER: 1

DATE: 4/11/95

ARCHITECT'S PROJECT NO: DSL-AMRB: 94-M08

CONTRACT DATE: NOVEMBER 14, 1994

CONTRACT FOR: ABANDONDED MINE RECLAMATION

The Contract is changed as follows:

CONSTRUCTION OF 1000 FEET OF (TYPE F-4M) BARBED WIRE FENCE. SEE WORK DIRECTIVE CHANGE, DATED NOVEMBER 21, 1994 TOTAL COST $3,750.00

Not valid until signed by the Owner, Architect and Contractor.

The original (Contract Sum) (Guaranteed Maximum Price) was	$ 99,060.00
Net change by previously authorized Change Orders	$
The (Contract Sum) (Guaranteed Maximum Price) prior to this Change Order was	$
The (Contract Sum) (Guaranteed Maximum Price) will be (increased) (decreased) (unchanged) by this Change Order in the amount of	$ 3,750.00
The new (Contract Sum) (Guaranteed Maximum Price) including this Change Order will be	$ 102,810.00

The Contract Time will be (increased) (decreased) (unchanged) by ( ) days.
The date of Substantial Completion as of the date of this Change Order therefore is

NOTE: This summary does not reflect changes in the Contract Sum, Contract Time or Guaranteed Maximum Price which have been authorized by Construction Change Directive.

NTL ENG. & GEOSCIENCE, INC.	DEBUFF DRILLING COMPANY, INC.	STATE OF MONTANA
ARCHITECT	CONTRACTOR	OWNER
P.O. BOX 3269	HC85, BOX 4314	1625 11TH AVE
Address	Address	Address
GREAT FALLS, MT 59403	LEWISTOWN, MT 59457	HELENA, MT 59620
BY [signature]	BY [signature] pres.	BY
DATE May 1, 1995	DATE April 17, 1995	DATE

CAUTION: You should sign an original AIA document which has this caution printed in red. An original assures that changes will not be obscured as may occur when documents are reproduced.

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CHANGE ORDER

ORDER NO. 1

PROJECT TITLE: SAND COULEE COAL MAINTENANCE PROJECT

MONT A/E or DSL-AMRB: DSL-AMRB: 94-M08

CONTRACT DATE: November 14, 1994

OWNER: Department of State Lands, Abandonded Mine Reclamation Bureau

CONTRACTOR: DeBuff Drilling Co. Inc.

Change Orders must be accompanied by an itemized cost breakdown. You are hereby requested to comply with the following changes from the Contract Documents. (Show separate costs for materials, labor, equipment, and miscellaneous. Show percent where applicable.)

ITEM NO.	DESCRIPTION OF CHANGES - ESTIMATED QUANTITIES & UNITS	COST OF CHANGES					TOTAL COST
		MAT'LS.	LABOR	EQUIP.	MISC.	TOTAL UNIT COST	
1	Construction of 1000 feet of (Type F-4M) barbed wire fence. See Work Directive Change, dated Nov. 21, 1994					3.75/ft	3,750
	TOTAL COST - MATERIALS, LABOR, EQUIPMENT & MISC.						$3,750.00
	OVERHEAD & PROFIT @ ____%						
	GRAND TOTAL - THIS CHANGE ORDER						$3,750.00

Original Contract Price	$ 99,060.00
Current Contract Price Adjusted by Previous Change Order	
Cost this Change Order (+ or -)	+ 3,750.00
New Contract Price including this Change Order	$ 102,810.00

WORK DIRECTIVE CHANGE

(Instructions on Reverse Side) No. 1

PROJECT: DATE OF ISSUANCE:

CONTRACTOR: DEBUFF DRILLING
(Name, Address) HC 85
P.O. BOX 4314
LEWISTOWN, MT 59457

OWNER: MONTANA DEPARTMENT OF STATE LANDS ABONDONED MINE RECLAMATION BUREAU

DSL-AMRB: John Koerth

SAND COULEE COAL
CONTRACT FOR: MAINTENANCE PROJECT

ENGINEER: NTL Engineering & Geo Science

You are directed to proceed promptly with the following change(s):

Description: Construction of a new Barbed wire Fence (TYPE F-4M) with gate along the operations area. (Including New Materials)

Purpose of Work Directive Change:
Live Stock Control inside project area.

Attachments: (list documents supporting change)
Revised Nelson Mine Hillside sheet 2, and Farm Fence Specifications Subsection 520.00.

If a claim is made that the above change(s) have affected Contract Price or Contract Time, any claim for a Change Order based thereon will involve one of the following methods of determining the effect of the change(s).

Method of determining change in Contract Price:

- ☐ Time and Materials
- ☒ Unit Prices
- ☐ Cost Plus Fixed Fee
- ☐ Other _____

Estimated increase ~~(decrease)~~ in Contract Price: $ 3750. If the change involves an increase, the estimated amount is not to be exceeded without further authorization.
* 3.75/FT incl. Panels & Gate

Method of determining change in Contract Time:

- ☐ Contractor's Records
- ☒ Engineer's Records
- ☐ Other _____

Estimated increase (~~decrease~~) in Contract Time: 5 days. If the change involves an increase, the estimated time is not to be exceeded without further authorization.

RECOMMENDED:

By: Kenneth E. Marshall 11/21/94
Engineer

AUTHORIZED:

By _____
Owner

ACCEPTED:

By: M2 DeBuff 11/22/94
Contractor

WDC - 1

RECEIVED ~~NOV 22~~ Nov 23 1994

Rev. 3/91

LIMITED POWER OF ATTORNEY

READ CAREFULLY

CONTRACTORS BONDING AND INSURANCE COMPANY IS RESPONSIBLE ONLY FOR THE BOND DESCRIBED AND UP TO THE AMOUNT SET FORTH IN THIS LIMITED POWER OF ATTORNEY. ANY ERASURE WILL VOID THIS POWER OF ATTORNEY IF YOU HAVE ANY QUESTIONS ABOUT OR WANT TO VERIFY THIS POWER OF ATTORNEY CALL CONTRACTORS BONDING AND INSURANCE COMPANY TOLL FREE AT 1(800)766-2242

Penal Sum $ $102,810.00 Attorney No. MT011 Power No. S00253 Bond No. X10166

Limited Power of Attorney Expires 7/11/95 Date Approved: 4/11/95

Approved by: Charles J. Falskow (Signature) Charles J. Falskow (Print Name)

Name of Principal: DEBUFF DRILLING COMPANY, INC.

Name of Obligee: STATE OF MT.

Description(s): SAND COULEE COAL MAINTENANCE PROJECT, CHANGE ORDER NUMBER 1

Location (If Applicable): CASCADE COUNTY MT.

KNOW ALL MEN BY THESE PRESENTS that CONTRACTORS BONDING AND INSURANCE COMPANY, a corporation duly organized and existing under the laws of the State of Washington, and having its principal office in Seattle, King County, Washington, does by these presents make, constitute and appoint CINDY S. REIQUAM of GREAT FALLS, MT

its true and lawful attorney-in-fact, with full power and authority hereby conferred in its name, place and stead, to execute, acknowledge and deliver the bond(s) described above, and to bind the Company thereby as fully and to the same extent as if each such bond was signed by the President, sealed with the corporate seal of the Company and duly attested by its Secretary, hereby ratifying and confirming all that the said attorney-in-fact may do in the premises. Said appointment is made under and by authority of the following resolutions adopted by the Board of Directors of CONTRACTORS BONDING AND INSURANCE COMPANY on 6/02/93.

RESOLVED that the President is authorized to appoint as attorney-in-fact of the Company CINDY S. REIQUAM with power and authority to sign on behalf of the Company those surety bonds which may from time to time be approved by the Vice President, Chief Financial Officer, President or Chief Executive Officer of the Company in such penal sums and according to such conditions as may be approved by the Vice President, Chief Financial Officer, President or Chief Executive Officer of the Company.

RESOLVED FURTHER that each Power of Attorney must set forth the specific description of the bond to which it applies, the name of the principal, the name of the obligee, the penal sum, the bond number (except for a bid bond where there is no number), the identifying number of the attorney-in-fact, the identifying number of the Power of Attorney, and the name and signature of the Vice President, the Chief Financial Officer, President or the Chief Executive Officer of the Company, and may set forth the description and amount of additional reinsurance or collateral, if any.

RESOLVED FURTHER that the Chief Executive Officer, President, Chief Financial Officer or Vice President of the Company is authorized to establish a specific expiration date for the Power of Attorney, and to modify that date from time to time as the Chief Executive Officer, President, Chief Financial Officer or Vice President deems necessary in his sole discretion; the applicable expiration date to be clearly set forth in any one Power of Attorney.

RESOLVED FURTHER that except as otherwise provided in the immediately succeeding resolution, under no circumstances shall (a) the contract amount for any bid, payment, performance, or combination payment and performance bond (i.e., a performance and payment obligation in one bond form) exceed $1,250,000 if the bond is guaranteed by the Small Business Administration; (b) the penal sum of any bond not guaranteed by the Small Business Administration (other than a bid bond which is further restricted by clause (c)) exceed $3,000,000; and (c) a bid bond which is not guaranteed by the Small Business Administration be executed for a job where if the contract is awarded, the bond penalty on any performance bond, payment bond or combination performance and payment bond (i.e., a performance and payment obligation in one bond form) to be executed pursuant to the bid bond is to exceed $3,000,000.

RESOLVED FURTHER that above named Attorney-in-fact is granted power and authority to exceed the applicable penal limits set forth in the immediately preceding resolution for any bond in an amount equal to the amount of any additional reinsurance or any cash, letter of credit or other security received as collateral security by the Company as inducement to issue the bond, so long as the description and amount of such additional reinsurance or collateral are set forth in the Power of Attorney.

RESOLVED FURTHER that the authority of the Secretary of the Company to certify the authenticity and effectiveness of the foregoing resolutions in any Limited Power of Attorney is hereby delegated to the following persons: the signature of any of the following to bind the Company with respect to the authenticity and effectiveness of the foregoing resolutions as certified by the Secretary of the Company: Donald Sirkin, Steven A. Gaines, Marc A. Mirkvicka and Charles J. Falskow.

RESOLVED FURTHER that the signatures (including certification that the Power of Attorney is still in force and effect) of the Chief Executive Officer, President, Chief Financial Officer, Vice President and Notary Public, and the corporate and Notary seals appearing on any Limited Power of Attorney containing this and the foregoing resolutions as well as the Limited Power of Attorney, itself, and its transmission may be by facsimile and such Limited Power of Attorney shall be deemed an original in all aspects.

RESOLVED FURTHER that all resolutions adopted prior to today, appointing the above named as attorney-in-fact for the Company are hereby superseded.

IN WITNESS WHEREOF, CONTRACTORS BONDING AND INSURANCE COMPANY has caused these presents to be signed by its Chief Executive Officer, President, Chief Financial Officer and Vice President and its corporate seal to be hereto affixed 6/02/93.

CONTRACTORS BONDING AND INSURANCE COMPANY

CORPORATE SEAL 1979 CONTRACTORS BONDING AND INSURANCE COMPANY OF WASHINGTON

By: _____ Donald Sirkin, Chief Executive Officer

By: Charles J. Falskow, Vice President

By: _____ Steven A. Gaines, President

By: Marc A. Mirkvicka, Chief Financial Officer

STATE OF WASHINGTON — COUNTY OF KING

On 6/02/93, personally appeared DONALD SIRKIN, STEVEN A. GAINES, MARC A. MIRKVICKA and CHARLES J. FALSKOW, to me known to be the Chief Executive Officer, President, Chief Financial Officer and Vice President, respectively of the corporation that executed the foregoing Limited Power of Attorney and acknowledged said Limited Power of Attorney to be the free and voluntary act and deed of said corporation, for the uses and purposes therein mentioned, and on oath stated that they are authorized to execute the said Limited Power of Attorney.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my official seal the day and year first above written.

NOTARY PUBLIC
STATE OF WASHINGTON
MOLLY A. HUDSPETH
My Appointment Expires JAN 9, 1997

Molly A. Hudspeth
Notary Public in and for the State of Washington, residing at Seattle

The undersigned, acting under authority of the Board of Directors of CONTRACTORS BONDING AND INSURANCE COMPANY, hereby certifies, as or in lieu of Certificate of the Secretary of CONTRACTORS BONDING AND INSURANCE COMPANY, that the above and foregoing is a full, true and correct copy of the Original Power of Attorney issued by said Company, and does hereby further certify that the said Power of Attorney is still in force and effect.

GIVEN under my hand, at Spokane, WA this 11 day of APR 19 95.

Charles J. Falskow

A1(120294)

ENGINEERING &
GEOSCIENCE, INC.

1505 14th ST. S.W. • P.O. Box 3269 • Great Falls, MT 59403-3269 • (406) 453-5400

RECEIVED
MAR 2 1 1995
Ans'd.....

March 17, 1995

Tetra Tech, Inc.
2969 Airport Road
Helena, Montana 59601

Attention: Mr. Earl Griffith

Subject: Sand Coulee Abandoned Mine Reclamation Project
Change Order No. 2 for Additional Subsurface Drain Lines, and
Two Double Panels for (Type F-4W) Farm Fencing

Gentlemen:

On February 22, 1995, Mr. John Koerth of the Montana Department of State Lands asked us to initiate a Work Directive Change, and subsequently a Change Order to construct additional subsurface drain lines, and two double panels for (Type 4-FM) farm fencing for the referenced project. A Work Directive Change form was completed on February 23, 1995. The Work Directive Change covered the construction of two additional subsurface drain laterals, and two double panels for (Type 4-FM) farm fencing on the Nelson Mine Slope construction site.

Please find attached CHANGE ORDER NO. 2 which corresponds to WORK DIRECTIVE CHANGE NO. 2. Please forward these two documents to Mr. Koerth and have Mr. Koerth sign the Work Directive Change, and return the signed Work Directive Change to our office, or return a copy of the signed document to us.

Please feel free to call if you have any questions regarding the change order.

Very truly yours,

John W. Ayers
Staff Engineer

Kenneth D. Munski, P.E.
Sr. Materials Engineer

JWA/KDM/tp
Enclosure

cc: DeBuff Drilling

CHANGE ORDER

AIA DOCUMENT G701

OWNER ☐
ARCHITECT ☐
CONTRACTOR ☐
FIELD ☐
OTHER ☐

PROJECT: SAND COULEE COAL MAINTENANCE PROJECT
(name, address) CASCADE COUNTY, MONTANA

TO CONTRACTOR: DEBUFF DRILLING COMPANY, INC.
(name, address) HC 85, BOX 4314
LEWISTOWN, MT 59457

CHANGE ORDER NUMBER: 2

DATE: 4/11/95

ARCHITECT'S PROJECT NO: DSL-AMRB: 94-M08

CONTRACT DATE: NOVEMBER 14, 1994

CONTRACT FOR: ABANDONDED MINE RECLAMATION

The Contract is changed as follows:

CONSTRUCTION OF TWO 20 FOOT SUBSURFACE DRAIN LINES.
SEE WORK DIRECTIVE CHANGE, DATED FEBRUARY 23, 1995 TOTAL COST $3,362.00

CONSTRUCTION OF TWO DOUBLE END PANELS FOR (TYPE F-4M) BARBED
WIRE FENCE. SEE WORK DIRECTIVE CHANGE DATED FEBRUARY 23, 1995 TOTAL COST $ 600.00

TOTAL THIS CHANGE ORDER $3,962.00

Not valid until signed by the Owner, Architect and Contractor.

The original (Contract Sum) (Guaranteed Maximum Price) was	$ 99,060.00
Net change by previously authorized Change Orders	$ 102,810.00
The (Contract Sum) (Guaranteed Maximum Price) prior to this Change Order was	$
The (Contract Sum) (Guaranteed Maximum Price) will be (increased) (decreased) (unchanged) by this Change Order in the amount of	$ 3,962.00
The new (Contract Sum) (Guaranteed Maximum Price) including this Change Order will be	$ 106,772.00

The Contract Time will be (increased) (decreased) (unchanged) by ( ) days.
The date of Substantial Completion as of the date of this Change Order therefore is

NOTE: This summary does not reflect changes in the Contract Sum, Contract Time or Guaranteed Maximum Price which have been authorized by Construction Change Directive.

ARCHITECT	CONTRACTOR	OWNER
NTL ENG. & GEOSCIENCE, INC.	DEBUFF DRILLING COMPANY, INC.	STATE OF MONTANA
P.O. BOX 3269	HC85, BOX 4314	1625 11TH AVE
GREAT FALLS, MT 59403	LEWISTOWN, MT 59457	HELENA, MT 59620
BY Kenneth F Mansch	BY M J DeBuff (pvc)	BY
DATE May 1, 1995	DATE April 17-1995	DATE

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CHANGE ORDER

ORDER NO. 2

PROJECT TITLE: SAND COULEE COAL MAINTENANCE PROJECT

MONT A/E or DSL-AMRB: DSL-AMRB: 94-M08

CONTRACT DATE: NOVEMBER 14, 1994

OWNER: DEPARTMENT OF STATE LANDS, ABANDONED MINE RECLAMATION BUREAU

CONTRACTOR: DeBUFF DRILLING CO. INC.

Change Orders must be accompanied by an itemized cost breakdown. You are hereby requested to comply with the following changes from the Contract Documents. (Show separate costs for materials, labor, equipment, and miscellaneous. Show percent where applicable.)

ITEM NO.	DESCRIPTION OF CHANGES - ESTIMATED QUANTITIES & UNITS	COST OF CHANGES					TOTAL COST
		MAT'LS.	LABOR	EQUIP.	MISC.	TOTAL UNIT COST	
1	Construction of two 20 foot subsurface drain lines. See Work Directive Change, dated February 23, 1995.	447.00	1165.00	1300,00	450.00	3362.00	3362.00
2	Construction of two double end panels for (Type F-4M) barbed wire fence. See Work Directive Change, dated February 23, 1995.					300/ea	600.00
	TOTAL COST - MATERIALS, LABOR, EQUIPMENT & MISC.						$3,962.00
	OVERHEAD & PROFIT @ ____%						
	GRAND TOTAL - THIS CHANGE ORDER						$3,962.00

Original Contract Price	$ 99,060.00
Current Contract Price Adjusted by Previous Change Order	102,810.00
Cost this Change Order (+ or -)	+ 3,962.00
New Contract Price including this Change Order	$ 106,772.00

LIMITED POWER OF ATTORNEY

READ CAREFULLY

CONTRACTORS BONDING AND INSURANCE COMPANY IS RESPONSIBLE ONLY FOR THE BOND DESCRIBED AND UP TO THE AMOUNT SET FORTH IN THIS LIMITED POWER OF ATTORNEY. ANY ERASURE WILL VOID THIS POWER OF ATTORNEY. IF YOU HAVE ANY QUESTIONS ABOUT OR WANT TO VERIFY THIS POWER OF ATTORNEY CALL CONTRACTORS BONDING AND INSURANCE COMPANY TOLL FREE AT 1(800)766-2242

Penal Sum $ $106,772.00 Attorney No. MT011 Power No. S00254 Bond No. X10166

Limited Power of Attorney Expires 7/11/95 Date Approved: 4/11/95

Approved by: Charles J. Falskow (Signature of) Charles J. Falskow (Print Name)

Name of Principal: DEBUFF DRILLING COMPANY, INC.

Name of Obligee: STATE OF MT

Description(s): SAND COULEE COAL MAINTENANCE PROJECT
CHANGE ORDER NUMBER 2

Location (If Applicable): CASCADE COUNTY MT.

KNOW ALL MEN BY THESE PRESENTS that CONTRACTORS BONDING AND INSURANCE COMPANY, a corporation duly organized and existing under the laws of the State of Washington, and having its principal office in Seattle, King County, Washington, does by these presents make, constitute and appoint CINDY S. REIQUAM of GREAT FALLS, MT

its true and lawful attorney-in-fact, with full power and authority hereby conferred in its name, place and stead, to execute, acknowledge and deliver the bond(s) described above, and to bind the Company thereby as fully and to the same extent as if each such bond was signed by the President, sealed with the corporate seal of the Company and duly attested by its Secretary; hereby ratifying and confirming all that the said attorney-in-fact may do in the premises. Said appointment is made under and by authority of the following resolutions adopted by the Board of Directors of CONTRACTORS BONDING AND INSURANCE COMPANY on 6/02/93

RESOLVED that the President is authorized to appoint attorneys-in-fact of the Company CINDY S. REIQUAM with power and authority to sign on behalf of the Company those surety bonds which may from time to time be approved by the Vice President, Chief Financial Officer, President or Chief Executive Officer of the Company in such penal sums and according to such conditions as may be approved by the Vice President, Chief Financial Officer, President or Chief Executive Officer of the Company.

RESOLVED FURTHER that each Power of Attorney must set forth the specific description of the bond to which it applies, the name of the principal, the name of the obligee, the penal sum, the bond number (except for a bid bond where there is no number), the identifying number of the attorney-in-fact, the identifying number of the Power of Attorney, and the name and signature of the Vice President, the Chief Financial Officer, President or the Chief Executive Officer of the Company; and may set forth the description and amount of additional reinsurance or collateral, if any.

RESOLVED FURTHER that the Chief Executive Officer, President, Chief Financial Officer or Vice President of the Company is authorized to establish a specific expiration date for the Power of Attorney and to modify that date from time to time as the Chief Executive Officer, President, Chief Financial Officer or Vice President deems necessary in his sole discretion; the applicable expiration date to be clearly set forth in any written Power of Attorney.

RESOLVED FURTHER that, except as otherwise provided in the immediately succeeding resolution, under no circumstances shall: (a) the contract amount for any bid, payment, performance, or combination payment and performance bond (i.e., a performance and payment obligation in one bond form) exceed $1,250,000 if the bond is guaranteed by the Small Business Administration; (b) the penal sum of any bond not guaranteed by the Small Business Administration (other than a bid bond which is further restricted by clause (c)) exceed $3,000,000; and (c) a bid bond which is not guaranteed by the Small Business Administration be executed for a job where, if the contract is awarded, the bond penalty on any performance bond, payment bond or combination performance and payment bond (i.e., a performance and payment obligation in one bond form) to be executed pursuant to the bid bond is to exceed $2,000,000.

RESOLVED FURTHER that above named Attorneys-in-fact is granted power and authority to exceed the applicable penal limits set forth in the immediately preceding resolution for any bond in an amount equal to the amount of any additional reinsurance or of any cash, letter of credit or other security received as collateral security by the Company as inducement to issue the bond, so long as the description and amount of additional reinsurance or collateral are set forth in the Power of Attorney.

RESOLVED FURTHER that the authority of the Secretary of the Company to certify the authenticity and effectiveness of the foregoing resolutions in any Limited Power of Attorney is hereby delegated to the following persons: the signature of any of the following to bind the Company with respect to the authenticity and effectiveness of the foregoing resolutions as designated by the Secretary of the Company: Donald Sirkin, Steven A. Gaines, Marc A. Mirkvicka, and Charles J. Falskow.

RESOLVED FURTHER that the signatures (including certification that the Power of Attorney is still in force and effect) of the Chief Executive Officer, President, Chief Financial Officer, Vice President and Notary Public and the corporate and Notary seals appearing on any Limited Power of Attorney containing this and the foregoing resolutions as well as the Limited Power of Attorney itself and its transmission may be by facsimile, and such Limited Power of Attorney shall be deemed an original in all respects.

RESOLVED FURTHER that all resolutions adopted prior to today, appointing the above named as attorney-in-fact for the Company are hereby superseded.

IN WITNESS WHEREOF, CONTRACTORS BONDING AND INSURANCE COMPANY has caused these presents to be signed by its Chief Executive Officer, President, Chief Financial Officer and Vice President and its corporate seal to be hereto affixed 6/02/93.

CONTRACTORS BONDING AND INSURANCE COMPANY

By: Donald Birkin, Chief Executive Officer

By: Charles J. Falskow, Vice President

By: Steven A. Gaines, President

By: Marc A. Mirkvicka, Chief Financial Officer

CORPORATE SEAL 1979 CONTRACTORS BONDING AND INSURANCE COMPANY WASHINGTON

STATE OF WASHINGTON — COUNTY OF KING

On 6/02/93, personally appeared DONALD SIRKIN, STEVEN A. GAINES, MARC A. MIRKVICKA and CHARLES J. FALSKOW, to me known to be the Chief Executive Officer, President, Chief Financial Officer and Vice President, respectively, of the corporation that executed the foregoing Limited Power of Attorney and acknowledged said Limited Power of Attorney to be the free and voluntary act and deed of said corporation, for the uses and purposes therein mentioned, and on oath stated that they are authorized to execute the said Limited Power of Attorney.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my official seal the day and year first above written.

NOTARY PUBLIC
STATE OF WASHINGTON
MOLLY A. HUDSPETH
My Appointment Expires JAN 9, 1997

Molly A. Hudspeth
Notary Public in and for the State of Washington, residing at Seattle

The undersigned, acting under authority of the Board of Directors of CONTRACTORS BONDING AND INSURANCE COMPANY, hereby certifies, as or in lieu of Certificate of the Secretary of CONTRACTORS BONDING AND INSURANCE COMPANY, that the above and foregoing is a full, true and correct copy of the Original Power of Attorney issued by said Company, and does hereby further certify that the said Power of Attorney is still in force and effect.

GIVEN under my hand, at Spokane, WA this 11 day of APR 19 95.

Charles J. Falskow

A1(120294)

WORK DIRECTIVE CHANGE

(Instructions on Reverse Side) No. _____

PROJECT: · DATE OF ISSUANCE:

CONTRACTOR: DeBuff
(Name, Address) HC 85
PO Box 4314
Lewistown, MT 59457

OWNER: MONTANA DEPARTMENT OF STATE LANDS ABANDONED MINE RECLAIMATION BUREAU

DSL-AMRB: John Koerth

CONTRACT FOR: SAND COULEE COAL MAINTENANCE PROJECT ENGINEER: Tetra Tech / NTL Engrg

You are directed to proceed promptly with the following change(s):

Description: 1) Add 2 - 20 Intervals to drain system at field directed locations
2) Add 2 - Double Panels & relocate metal posts at field directed locations.

Purpose of Work Directive Change:
1) Improve effectiveness of drain
2) meet landowner's requirement for fence geometry/construction.

Attachments: (list documents supporting change)
see negotiated price summary

If a claim is made that the above change(s) have affected Contract Price or Contract Time, any claim for a Change Order based thereon will involve one of the following methods of determining the effect of the change(s).

Method of determining change in Contract Price:

- ☐ Time and Materials
- ☐ Unit Prices
- ☐ Cost Plus Fixed Fee
- ☒ Other Negotiated based upon quoted equipment rates

Estimated increase ~~(decrease)~~ in Contract Price: $ 3962.00. If the change involves an increase, the estimated amount is not to be exceeded without further authorization.

Method of determining change in Contract Time:

- ☐ Contractor's Records
- ☐ Engineer's Records
- ☒ Other Estimated Time to Accomplish changes

Estimated increase (decrease) in Contract Time: 3 days. If the change involves an increase, the estimated time is not to be exceeded without further authorization.

RECOMMENDED:

By: Kenneth E. Merrill
Engineer

AUTHORIZED:

By _____
Owner

ACCEPTED:

By: Rod D. DeBuff
Contractor
DeBuff Drilling Co., Inc.

CHANGE ORDER

AIA DOCUMENT G701

OWNER ☐
ARCHITECT ☐
CONTRACTOR ☐
FIELD ☐
OTHER ☐

PROJECT: SAND COULEE COAL MAINTENANCE PROJECT
(name, address) CASCADE COUNTY, MONTANA

TO CONTRACTOR: DEBUFF DRILLING COMPANY, INC.
(name, address) HC 85, BOX 4314
LEWISTOWN, MT 59457

CHANGE ORDER NUMBER: 3

DATE: 4/11/95

ARCHITECT'S PROJECT NO: DSL-AMRB: 94-M08

CONTRACT DATE: NOVEMBER 14, 1994

CONTRACT FOR: ABANDONDED MINE RECLAMATION

The Contract is changed as follows:

SALVAGE AND REPLACE COVERSOIL	TOTAL COST -2040.00
UNCLASSIFIED EXCAVATION FIRE HALL	- 24.00
IMPORTED FILL SOIL	16.00
REMOVE AND REPLACE FENCES F-4M	- 90.00
REMOVE AMEND AND REPLACE SUBSOILS	- 784.00
IMPORTED TOPSOIL	6060.00
FERTILIZE SEE AND MULCH	800.00
CENTERVILLE PARKING LOT 3/4 CRUSHED TOPSURFACING	- 212.00
STRAW BALES FOR EROSION CONTROL	516.00

TOTAL CHANGE ORDER $4,242.00

Not valid until signed by the Owner, Architect and Contractor.

The original (Contract Sum) (Guaranteed Maximum Price) was . . . . . $ 99,060.00
Net change by previously authorized Change Orders . . . . . $ 106,772.00
The (Contract Sum) (Guaranteed Maximum Price) prior to this Change Order was . . . . . $
The (Contract Sum) (Guaranteed Maximum Price) will be (increased) (~~unchanged~~) by this Change Order in the amount of . . . . . $ 4,242.00
The new (Contract Sum) (Guaranteed Maximum Price) including this Change Order will be . . $ 111,014.00

The Contract Time will be (increased) (decreased) (unchanged) by ( ) days.
The date of Substantial Completion as of the date of this Change Order therefore is

NOTE: This summary does not reflect changes in the Contract Sum, Contract Time or Guaranteed Maximum Price which have been authorized by Construction Change Directive.

NTL ENG. & GEOSCIENCE, INC.	DEBUFF DRILLING COMPANY, INC.	STATE OF MONTANA
ARCHITECT	CONTRACTOR	OWNER
P.O. BOX 3269	HC85, BOX 4314	1625 11TH AVE
Address	Address	Address
GREAT FALLS, MT 59403	LEWISTOWN, MT 59457	HELENA, MT 59620
BY Kenneth L. Marnell	BY April 17, 1995	BY
DATE May 1, 1995	DATE [illegible] per	DATE

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CHANGE ORDER

ORDER NO. 3

PROJECT TITLE: SAND COULEE COAL MAINTENANCE PROJECT

MONT A/E or DSL-AMRB: DSL-AMRB: 94-MC8

CONTRACT DATE: November 14, 1994

OWNER: DEPARTMENT OF STATE LANDS, ABANDONED MINE RECLAMATION BUREAU

CONTRACTOR: DeBUFF DRILLING CO. INC.

Change Orders must be accompanied by an itemized cost breakdown. You are hereby requested to comply with the following changes from the Contract Documents. (Show separate costs for materials, labor, equipment, and miscellaneous. Show percent where applicable.)

ITEM NO.	DESCRIPTION OF CHANGES - ESTIMATED QUANTITIES & UNITS	COST OF CHANGES					TOTAL COST
		MATLS.	LABOR	EQUIP.	MISC.	TOTAL UNIT COST	
1.	Salvage and Replace Coversoil	-510CY				4.00	-2040.00
2.	Unclassfied Excavation Fire Hall	- 6CY				4.00	- 24.00
3.	Imported Fill Soil	+ 2CY				8.00	+ 16.00
4.	Remove and Replace Fences F-4N	- 45FT				2.00	- 90.00
5.	Remove, Amend and Replace Subsoils	-112CY				7.00	- 784.00
6.	Imported Topsoil	+404CY				15.00	+6060.00
7.	Fertilize Seed and Mulch	+0.4 ACRES				2000.00	+ 800.00
8.	Centerville Parking Lot 3/4 Crushed Topsurfacing	- 53SY				4.00	- 212.00
9.	Straw Bales for Erosion Control	+ 43BALES				12.00	+ 516.00
					TOTAL COST - MATERIALS, LABOR, EQUIPMENT & MISC.		$4,242.00
					OVERHEAD & PROFIT @ ____%		
					GRAND TOTAL - THIS CHANGE ORDER		

Original Contract Price	$ 99,060.00
Current Contract Price Adjusted by Previous Change Order	106,772.00
Cost this Change Order (+ or -)	+ 4,242.00
New Contract Price including this Change Order	111,014.00

LIMITED POWER OF ATTORNEY

READ CAREFULLY

CONTRACTORS BONDING AND INSURANCE COMPANY IS RESPONSIBLE ONLY FOR THE BOND DESCRIBED AND UP TO THE AMOUNT SET FORTH IN THIS LIMITED POWER OF ATTORNEY. ANY ERASURE WILL VOID THIS POWER OF ATTORNEY. IF YOU HAVE ANY QUESTIONS ABOUT OR WANT TO VERIFY THIS POWER OF ATTORNEY CALL CONTRACTORS BONDING AND INSURANCE COMPANY TOLL FREE AT 1(800)766-2242

Penal Sum $ $111,014.00 Attorney No. MT011 Power No. S00255 Bond No. X10166

Limited Power of Attorney Expires 7/11/95 Date Approved: 4/11/95

Approved by: Charles J. Falskow (Signature) Charles J. Falskow (Print Name)

Name of Principal: DEBUFF DRILLING COMPANY, INC.

Name of Obligee: STATE OF MT.

Description(s): SAND COULEE COAL MAINTENANCE PROJECT
CHANGE ORDER NUMBER 3

Location (If Applicable): CASCADE COUNTY MT.

KNOW ALL MEN BY THESE PRESENTS that CONTRACTORS BONDING AND INSURANCE COMPANY, a corporation duly organized and existing under the laws of the State of Washington, and having its principal office in Seattle, King County, Washington, does by these presents make, constitute and appoint CINDY S. REIQUAM of GREAT FALLS, MT

its true and lawful attorney-in-fact, with full power and authority hereby conferred in its name, place and stead, to execute, acknowledge and deliver the bond(s) described above; and to bind the Company thereby as fully and to the same extent as if each such bond was signed by the President, sealed with the corporate seal of the Company and duly attested by its Secretary, hereby ratifying and confirming all that the said attorney-in-fact may do in the premises. Said appointment is made under and by authority of the following resolutions adopted by the Board of Directors of CONTRACTORS BONDING AND INSURANCE COMPANY on 6/02/93.

RESOLVED that the President is authorized to appoint as attorney-in-fact of the Company CINDY S. REIQUAM with power and authority to sign on behalf of the Company those surety bonds which may from time to time be approved by the Vice President, Chief Financial Officer, President or Chief Executive Officer of the Company in such penal sums and according to such conditions as may be approved by the Vice President, Chief Financial Officer, President or Chief Executive Officer of the Company.

RESOLVED FURTHER that each Power of Attorney must set forth the specific description of the bond to which it applies, the name of the principal, the name of the obligee, the penal sum, the bond number (except for a bid bond where there is no number), the identifying number of the attorney-in-fact, the identifying number of the Power of Attorney, and the name and signature of the Vice President, the Chief Financial Officer, President or the Chief Executive Officer of the Company, and may set forth the description and amount of additional reinsurance or collateral, if any.

RESOLVED FURTHER that the Chief Executive Officer, President, Chief Financial Officer or Vice President of the Company is authorized to establish a specific expiration date for the Power of Attorney, and to modify that date from time to time as the Chief Executive Officer, President, Chief Financial Officer or Vice President deems necessary in his sole discretion; the applicable expiration date to be clearly set forth in any written Power of Attorney.

RESOLVED FURTHER that, except as otherwise provided in the immediately succeeding resolution, under no circumstances shall: (a) the contract amount for any bid, payment, performance, or combination payment and performance bond (i.e., a performance and payment obligation in one bond form) exceed $1,250,000 if the bond is guaranteed by the Small Business Administration; (b) the penal sum of any bond not guaranteed by the Small Business Administration (other than a bid bond which is further restricted by clause (c)) exceed $5,000,000; and (c) a bid bond which is not guaranteed by the Small Business Administration be executed for a job where, if the contract is awarded, the bond penalty on any performance bond, payment bond or combination performance and payment bond (i.e., a performance and payment obligation in one bond form) to be executed pursuant to the bid bond is to exceed $3,000,000.

RESOLVED FURTHER that above named Attorney-in-fact is granted power and authority to exceed the applicable penal limits set forth in the immediately preceding resolution for any bond in an amount equal to the amount of any additional reinsurance or of any cash, letter of credit or other security received as collateral security by the Company as inducement to issue the bond, so long as the description and amount of additional reinsurance or collateral are set forth in the Power of Attorney.

RESOLVED FURTHER that the authority of the Secretary of the Company to certify the authenticity and effectiveness of the foregoing resolutions in any Limited Power of Attorney is hereby delegated to the following persons: the signature of any of the following to bind the Company with respect to the authenticity and effectiveness of the foregoing resolutions as so signed by the Secretary of the Company: Donald Sirkin, Steven A. Gaines, Marc A. Mrkvicka, and Charles J. Falskow.

RESOLVED FURTHER that the signatures (including certification that the Power of Attorney is still in force and effect) of the Chief Executive Officer, President, Chief Financial Officer, Vice President and Notary Public, and the corporate and Notary seals appearing on any Limited Power of Attorney containing this and the foregoing resolutions as well as the Limited Power of Attorney itself and its transmission may be by facsimile and such Limited Power of Attorney shall be deemed an original in all its aspects.

RESOLVED FURTHER that all resolutions adopted prior to today, appointing the above named as attorney-in-fact for the Company are hereby superseded.

IN WITNESS WHEREOF, CONTRACTORS BONDING AND INSURANCE COMPANY has caused these presents to be signed by its Chief Executive Officer, President, Chief Financial Officer and Vice President and its corporate seal to be hereto affixed 6/2/93.

CONTRACTORS BONDING AND INSURANCE COMPANY

CONTRACTORS BONDING AND INSURANCE CO. CORPORATE SEAL 1979 WASHINGTON COMPANY

By: _____ By: Charles J. Falskow
Donald Sirkin, Chief Executive Officer — Charles J. Falskow, Vice President

By: _____ By: Marc A. Mrkvicka
Steven A. Gaines, President — Marc A. Mrkvicka, Chief Financial Officer

STATE OF WASHINGTON — COUNTY OF KING

On 6/02/93 personally appeared DONALD SIRKIN, STEVEN A. GAINES, MARC A. MRKVICKA and CHARLES J. FALSKOW, to me known to be the Chief Executive Officer, President, Chief Financial Officer and Vice President, respectively, of the corporation that executed the foregoing Limited Power of Attorney and acknowledged said Limited Power of Attorney to be the free and voluntary act and deed of said corporation, for the uses and purposes therein mentioned, and on oath stated that they are authorized to execute the said Limited Power of Attorney.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my official seal the day and year first above written.

NOTARY PUBLIC
STATE OF WASHINGTON
MOLLY A. HUDSPETH
My Appointment Expires JAN 9, 1997

Molly A. Hudspeth
Notary Public in and for the State of Washington, residing at Seattle

The undersigned, acting under authority of the Board of Directors of CONTRACTORS BONDING AND INSURANCE COMPANY, hereby certifies, as or in lieu of Certificate of the Secretary of CONTRACTORS BONDING AND INSURANCE COMPANY, that the above and foregoing is a full, true and correct copy of the Original Power of Attorney issued by said Company, and does hereby further certify that the said Power of Attorney is still in force and effect.

GIVEN under my hand, at Spokane, WA this 11 day of APR 19 95.

Charles J. Falskow

A1(120294)

ATTACHMENT 3

PAYMENT REQUESTS

ENGINEERING & GEOSCIENCE, INC.
1505 14th ST. S.W. • P.O. Box 3269 • Great Falls, MT 59403-3269 • (406) 453-5400

January 17, 1995

Tetra Tech, Inc.
2969 Airport Road
Helena, Montana 59601

Attention: Mr. Earl Griffith

Subject: Payment Request Number One
Sand Coulee Coal Maintenance Project

Gentlemen:

On January 4, 1995, we received the first payment request for the referenced project from DeBuff Drilling Co., Inc. After reviewing payment request and making minor quantity adjustments, we submit the attached payment request as complete and correct. Therefore, we recommend that payment be made in accordance with the attached request. Four copies of the payment request form are submitted for your approval and submission to the Department of State Lands.

Please call us if you have any questions regarding this payment request or the corrections made.

Sincerely,

John Ayers
Staff Engineer

Kenneth D. Munski, P.E.
Sr. Materials Engineer

JA/KDM/tp
Enclosures

PAYMENT REQUEST NO. ONE

FROM Dec. 1 TO Jan. 1

PROJECT TITLE: Sand Coulee Coal Maintenance Project Cascade County, Montana

LOCATION: Sand Coulee Montana MONT A/E or DSL-AMRB: DSL/AMRB 94-M08

NAME OF CONTRACTOR: DeBuff Drilling Co. Inc.

ADDRESS: HC 85 Box 4314 Lewistown Montana 59457

SUMMARY OF PROJECT STATUS

Amount of Original Contract		$ 99060.00
Change Order No. 1	$ 3750.00	
Change Order No. ____	$	
Change Order No. ____	$	
Amount of Approved Change Order(s)		$ 3750.00
TOTAL CONTRACT AMOUNT		$102810.00

Pay Request No.	Amount of Request
1	~~44285.38~~ 43708.00

Total Contract Amount Completed to Date	$ ~~49703.00~~ 49055.00
Less Retainage (10 %)	$ ~~4970.30~~ 4905.50
TOTAL AMOUNT EARNED TO DATE	$ ~~44732.70~~ 44149.50
Less Previous Payments	$
AMOUNT DUE THIS PAYMENT	$ ~~44732.70~~ 44149.50
Less 1% Tax	$ ~~447.32~~ 441.50
TOTAL DUE CONTRACTOR	$ ~~44285.38~~ 43708.00

I certify that this claim is correct and just in all respects and that payment or credit has not been received.

DeBuff Drilling Co. Inc.
Contractor

By MJ DeBuff

Date Jan. 3, 1995

RECOMMENDED BY:

NTL Engineering & Geoscience, Inc.
Engineer

By Kenneth E. Marcellus

Date January 17, 1995

APPROVED BY:

Dept. of State Lands, Abandoned Mine Reclamation Bureau
Owner

By _____

Date _____

Item No.	Description	Contract Quantity	Contract Unit Price	Previous Quantity Requested	Current Quantity Completed	Total Quantity Completed To Date	Total Contract Amount Completed to Date	Amount Due this Payment
1	Mobilization	1	5000.00	0	100% ✓	100% ✓	5,000 ✓	5,000 ✓
2	Salvage and Replace coversoil	700 cy	4.00	0	27 ~~50%~~	27 ~~50%~~	760 ~~1,400~~	760 ~~1,400~~
3	Unclassified Excavation Fire h	100 cy	4.00	0	94 ~~100~~ cy	94 ~~100~~ cy	376 ~~400~~	376 ~~400~~
4	Imported fillsoil	100 cy	8.00	0	102 ~~100~~ cy	102 ~~100~~ cy	816 ~~800~~	816 ~~800~~
5	Remove & Replace fences F-4M	750 FT	2.00	0	50% ✓	50% ✓	750 ✓	750 ✓
6	Remove, amend & replace subsoils	4470 cy	7.00	0	50% ✓	50% ✓	15,645 ✓	15,645 ✓
7	Import topsoil	1330 cy	15.00	0	0	0	0	0
8	Fertilize seed & mulch	1.6 ac	2000.00	09	0	0	0	0
9	Nelson Mine seep underdrain	600 LF	18.50	0	600 LF ✓	600 LF ✓	11,100 ✓	11,100 ✓
10	Nelson Mine underdrain connector pipe	180 LF	6.00	0	180 LF ✓	180 LF ✓	1,080 ✓	1,080 ✓
11	Nelson Mine drop/manhole	1 EA	2000.00	0	100% ✓	100% ✓	2,000 ✓	2,000 ✓
12	Flowable fill	50 cy	120.00	0	50 cy ✓	50cy ✓	6,000 ✓	6,000 ✓
13	Mechanical elect. & structural Romanchuk	1 Ls	1500.00	0	50% ✓	50% ✓	750 ✓	750 ✓
14	Centerville parking lot 3/4 crushed surfacing	2570 sy	4.00	0	10% ✓	10% ✓	1,028 ✓	1,028 ✓
15	Straw bales for erosion control	180	12.00	0	0	0	0	0
wdc	Type F-4M fence	1000 LF	3.75 LF	o	1000 LF ✓	1000LF ✓	3,750 ✓	3,750 ✓
	Materials on Site (Attach Schedule)	-	-	$	$	——>	$	$49055 ~~49,703~~
TOTAL							$	$

✓ John W. Ayer

RECEIVED
MAR 0 2 1995
Ans'd.....

PAYMENT REQUEST NO. TWO

FROM Jan.1 TO Feb.1

PROJECT TITLE: Sand Coulee Coal Maintenance Project Cascade County, Montana

LOCATION: Sand Coulee Montana MONT A/E or DSL-AMRB: DSL/AMRB 94-M08

NAME OF CONTRACTOR: DeBuff Drilling Co. Inc.

ADDRESS: HC 85 Box 4314 Lewistown Montana 59457

SUMMARY OF PROJECT STATUS

Amount of Original Contract		$ 99,060.00
Change Order No. 1	$3,750	
Change Order No. ____	$	
Change Order No. ____	$	
Amount of Approved Change Order(s)		$ 3,750.00
TOTAL CONTRACT AMOUNT		$ 102,810.00

Pay Request No.	Amount of Request
1	$49,055.00
2	~~$52,275.00~~ 51,321.00

Total Contract Amount Completed to Date	$ ~~101,330.00~~ 100,376.00
Less Retainage (10 %)	$ ~~10,133.00~~ 10,037.60
TOTAL AMOUNT EARNED TO DATE	$ ~~91,197.00~~ 90,338.40
Less Previous Payments	$ 44,149.50
AMOUNT DUE THIS PAYMENT	$ ~~47,047.50~~ 46,188.90
Less 1% Tax	$ ~~470.00~~ 461.88
TOTAL DUE CONTRACTOR	$ ~~46,577.50~~ 45,727.02

I certify that this claim is correct and just in all respects and that payment or credit has not been received.

DeBuff Drilling Co., Inc.
Contractor

By Ruel P. DeBuff

Date Feb 14, 1995

RECOMMENDED BY:

Engineer

By

Date

APPROVED BY:

Dept. of State Lands, Abandoned Mine Reclamation Bureau
Owner

By

Date

RESP. CNTR. 30160 222.85000 7-01
OBJ. EXP. 2741
APPROVAL Vic R Anderson
DATE 2/28/95

Item No.	Description	Contract Quantity	Contract Unit Price	Previous Quantity Requested	Current Quantity Completed	Total Quantity Completed To Date	Total Contract Amount Completed to Date	Amount Due this Payment
1	Mobilization	1	5000.00	5000 ✓	0	100% ✓	5000 ✓	0
2	Salvage and Replace coversoil	700 cy	4.00	190 cy ~~95cy~~	0 cy ~~258cy~~	190cy ~~353cy~~	760 ~~1412~~	0 ~~652~~
3	Unclassified Excavation Fire h	100 cy	4.00	94cy ✓	0	94cy ✓	376 ✓	0
4	Imported fillsoil	100 cy	8.00	102cy ✓	0	102cy ✓	816 ✓	0
5	Remove & Replace fences F-4M	750 FT	2.00	375ft ✓	330ft ~~375ft~~	705ft ~~750ft~~	1410 ~~1500~~	660 ~~750~~
6	Remove, amend & replace subsoils	4470 cy	7.00	2235cy ✓	2123cy ✓	4358cy ✓	30,506 ✓	14,861 ✓
7	Import topsoil	1330 cy	15.00	0	1734cy ✓	1734cy ✓	26,010 ✓	26,010 ✓
8	Fertilize seed & mulch	1.6 ac	2000.00	0	0	0	0	0
9	Nelson Mine seep underdrain	600 LF	18.50	600lf ✓	0	600Lf ✓	11,100 ✓	0
10	Nelson Mine underdrain connector pipe	180 LF	6.00	180LF ✓	0	180LF ✓	1080 ✓	0
11	Nelson Mine drop/manhole	1 EA	2000.00	100% ✓	0	100% ✓	2000 ✓	0
12	Flowable fill	50 cy	120.00	50cy ✓	0	50cy ✓	6000 ✓	0
13	Mechanical elect. & structural Romanchuk	1 Ls	1500.00	50% ✓	50% ✓	100% ✓	1500 ✓	750 ✓
14	Centerville parking lot 3/4 crushed surfacing	2570 sy	4.00	10% ✓	90% ✓	100% ✓	10,068 ~~10,280~~	9040 ~~9252~~
15	Straw bales for erosion control	180	12.00	0	0	0	0	0
wdc	Type F-4M Fence	1000LF	3.75LF	1000LF ✓	0	1000LF ✓	3750 ✓	0
							100,376 ~~101,330~~	51,321 ~~52,275~~
	Materials on Site (Attach Schedule)	-	-	$	$	——→	$	$
TOTAL							$	$

✓ John W. Agar

PAYMENT REQUEST NO. 3

FROM 2/1/95 TO 3/17/95

PROJECT TITLE: Sand Coulee Coal Maintenance Project Cascade County, Montana

LOCATION: Sand Coulee Montana MONT A/E or DSL-AMRB: DSL/AMRB 94-M08

NAME OF CONTRACTOR: DeBuff Drilling Co. Inc.

ADDRESS: Rt. Box 2341A Lewistown, Mt. 59457

SUMMARY OF PROJECT STATUS

Amount of Original Contract		$ 99,060.00
Change Order No. 1	$ 3750.00	
Change Order No. 2	$ 3962.00	
Change Order No. ____	$	
Amount of Approved Change Order(s)		$ 7,712.00 ✓
TOTAL CONTRACT AMOUNT		$106,772.00 ✓

Pay Request No.	Amount of Request
1	$49,055.00
2	$51,321.00
3	$10,638.00

Total Contract Amount Completed to Date	$ 111,014.00 ✓
Less Retainage (0 %)	$ -0- ✓
TOTAL AMOUNT EARNED TO DATE	$ 111,014.00 ✓
Less Previous Payments	$ 90,338.40 ✓
AMOUNT DUE THIS PAYMENT	$ 20,675.60 ✓
Less 1% Tax	$ 206.75 ✓
TOTAL DUE CONTRACTOR	$ 20,468.85 ✓

I certify that this claim is correct and just in all respects and that payment or credit has not been received.

DeBuff Drilling Co., Inc.
Contractor

By Rod D. DeBuff

Date March 20, 1995

RECOMMENDED BY:

NTL Engineering & Geoscience, Inc
Engineer

By Kenneth E. Marnell

Date Mar 24, 1995

APPROVED BY:

Dept. of State Lands, Abandoned Mine Reclamation Bureau
Owner

By _____

Date _____

ATTACHMENT 4

ANALYSIS OF CONSULTANT COSTS INCURRED

ANALYSIS OF CONSULTANT COSTS

MT. DSL/AMRB

AMRB Project #94-M08 Sand Coulee Reclamation

Date of Preparation: June 28, 1995

Construction Engineering and Project Administration Cost:

Engineering Service	Amount (As of June 16, 1995)
Tetra Tech, Inc.	$11,740.95
NTL Engineering & Geoscience	$32,638.18
	$44,379.13
Construction Costs	$111,014.00
Total Engineering Cost/Construction Cost	39.98%

ATTACHMENT 5

AS-BUILT DRAWINGS

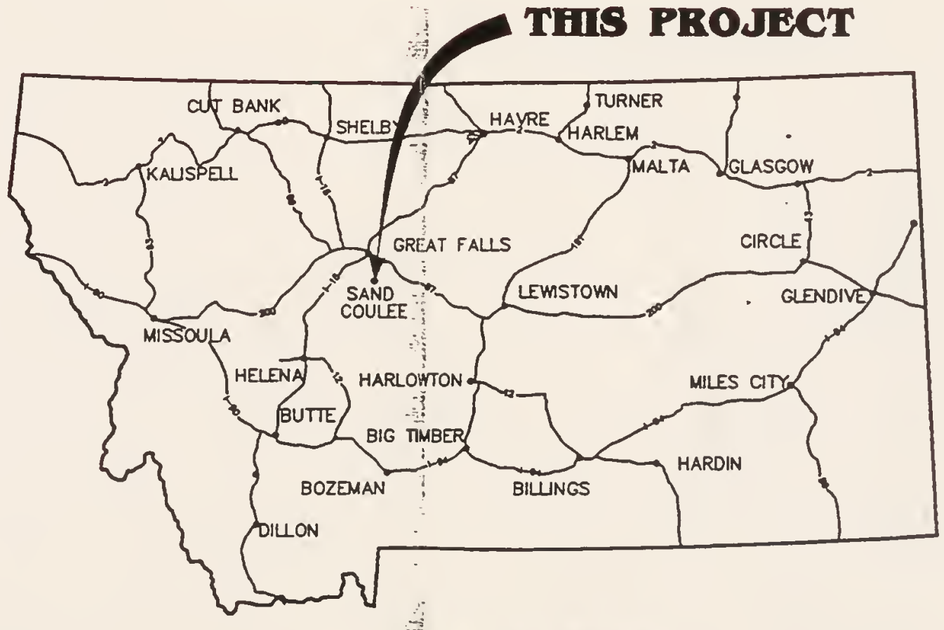
SAND COULEE COAL MAINTENANCE PROJECT

MT DSL AMRB NO. 94-M08

AS-BUILT

ABBREVIATIONS

CONC	CONCRETE
CP	CONTROL POINT
ELEV, EL	ELEVATION
EXIST	EXISTING
GAL	GALLON
IE	INVERT ELEVATION
MIN	MINIMUM
MH	MANHOLE
PI	POINT OF INTERSECTION
PVC	POLY VINYL CHLORIDE PIPE
RCP	REINFORCED CONCRETE PIPE
SHT	SHEET
SPEC	SPECIFICATIONS
STD	STANDARD
TBM	TEMPORARY BENCH MARK
TYP	TYPICAL



VICINITY MAP

NOTE: PLANS PREPARED BY NCI FOR TETRA TECH, INC. UNDER CONTRACT TO MONTANA DEPARTMENT OF STATE LANDS, ABANDONED MINE RECLAMATION BUREAU.

STORMWATER EROSION CONTROL PLAN
BEST MANAGEMENT PRACTICES (BMP)

THE FOLLOWING BMP'S SHALL BE INSTALLED AND MAINTAINED THROUGHOUT CONSTRUCTION:

a. TEMPORARY STABILIZATION
   (i) INSTALLATION OF STRAW BALE DIKE AT TOE OF SLOPES AND ANY VEHICLE WASHDOWN AREAS AT ONSET OF CONSTRUCTION.
   (ii) INSTALLATION OF STRAW BALE DIKE ON DOWNSLOPE PERIMETER OF COVER SOIL STOCKPILE.
   (iii) MULCHING OF ENTIRE DISTURBED AREA AFTER SEEDING AND FERTILIZING.
b. PERMANENT STABILIZATION
   (i) PERMANENT SEEDING
c. GOOD HOUSEKEEPING AND MATERIAL HANDLING
   (i) TO PREVENT TRACKING OF SEDIMENT OFF-SITE, PRIOR TO LEAVING THE SITE, ALL VEHICLES SHALL BE WASHED DOWN ON-SITE AT SUCH A LOCATION AS TO CONTAIN ALL WASHED SEDIMENT ON-SITE (i.e. ABOVE STRAW BALE OR SILT FENCE DIKE).
   (ii) FUEL, OIL, GREASE AND OTHER SUCH MATERIALS SHALL BE STORED IN ONE LOCATION WITHIN THE STAGING AREA. ALL MATERIALS SHALL BE STORED IN A BERMED PLASTIC LINED STORAGE AREA WITH A CAPACITY OF 110 PERCENT OF THE LARGEST CONTAINER. ABSORBENT MATERIAL SHALL BE AVAILABLE ON-SITE FOR CLEAN UP OF ANY SPILLS.
   (iii) FERTILIZER SHALL BE STORED ON PALLETS OFF GROUND AND COVERED WITH PLASTIC OR IN OTHER SUCH MANNER AS TO PREVENT SPILLAGE AND WASHING FROM RAIN WATER INTO SURROUNDING SOIL OR OFF-SITE.

SHEET INDEX

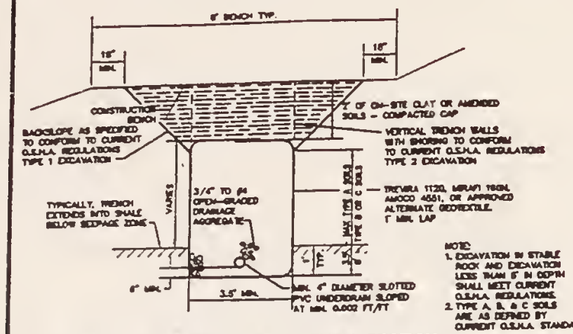
1. COVER
2. NELSON MINE HILLSIDE
3. SAND COULEE FIRE HALL SLOPE STABILIZATION
4. ROMANCHUK RESIDENCE
5. CENTERVILLE PARKING LOT

NEIL CONSULTANTS, INC.
4509 North Star Boulevard
P.O. Box 6350
Great Falls, MT 59406
Phone (406) 453-5478
Fax (406) 453-2009

NEIL CONSULTANTS INC.

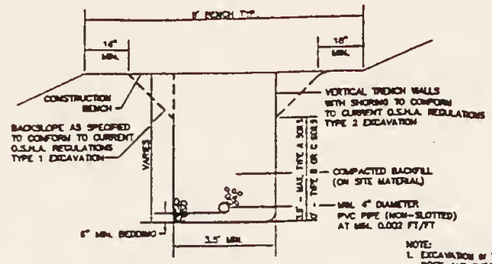
DATE: SEPT. 26, 1994
DESIGN: MUNSKI & PRINZING
DRAWN: KUEHN
CHECKED: NEIL

SET NUMBER


8' BENCH TYP.
18" MIN.
CONSTRUCTION BENCH
BACKSLOPE AS SPECIFIED TO CONFORM TO CURRENT O.S.H.A. REGULATIONS TYPE 1 EXCAVATION
2' OF ON-SITE CLAY OR AMENDED SOILS - COMPACTED CAP
VERTICAL TRENCH WALLS WITH SHORING TO CONFORM TO CURRENT O.S.H.A. REGULATIONS TYPE 2 EXCAVATION
TYPICALLY, TRENCH EXTENDS INTO SHALE BELOW SEEPAGE ZONE
VARIES
3/4" TO #4 OPEN-GRADED DRAINAGE AGGREGATE
TREVIRA 1120, MIRAFI 160N, AMOCO 4551, OR APPROVED ALTERNATE GEOTEXTILE. 1' MIN. LAP
MAX. TYPE A SOILS TYPE B OR C SOILS
4' TYP.
3.5' MIN.
6" MIN.
MIN. 4" DIAMETER SLOTTED PVC UNDERDRAIN SLOPED AT MIN. 0.002 FT/FT
NOTE:
1. EXCAVATION IN STABLE ROCK AND EXCAVATION LESS THAN 5' IN DEPTH SHALL MEET CURRENT O.S.H.A. REGULATIONS.
2. TYPE A, B, & C SOILS ARE AS DEFINED BY CURRENT O.S.H.A. STANDARDS.

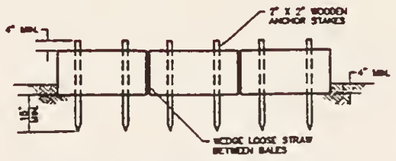
SLOTTED UNDERDRAIN TRENCH SECTION

NOT TO SCALE


8' BENCH TYP.
18" MIN.
CONSTRUCTION BENCH
BACKSLOPE AS SPECIFIED TO CONFORM TO CURRENT O.S.H.A. REGULATIONS TYPE 1 EXCAVATION
VARIES
VERTICAL TRENCH WALLS WITH SHORING TO CONFORM TO CURRENT O.S.H.A. REGULATIONS TYPE 2 EXCAVATION
COMPACTED BACKFILL (ON SITE MATERIAL)
MIN. 4" DIAMETER PVC PIPE (NON-SLOTTED) AT MIN. 0.002 FT/FT
MAX. TYPE A SOILS TYPE B OR C SOILS
8" MIN. BEDDING
3.5' MIN.
NOTE:
1. EXCAVATION IN STABLE ROCK AND EXCAVATION LESS THAN 5' IN DEPTH SHALL MEET CURRENT O.S.H.A. REGULATIONS.
2. TYPE A, B, & C SOILS ARE AS DEFINED BY CURRENT O.S.H.A. STANDARDS.

CONNECTOR PIPE TRENCH SECTION

NOT TO SCALE

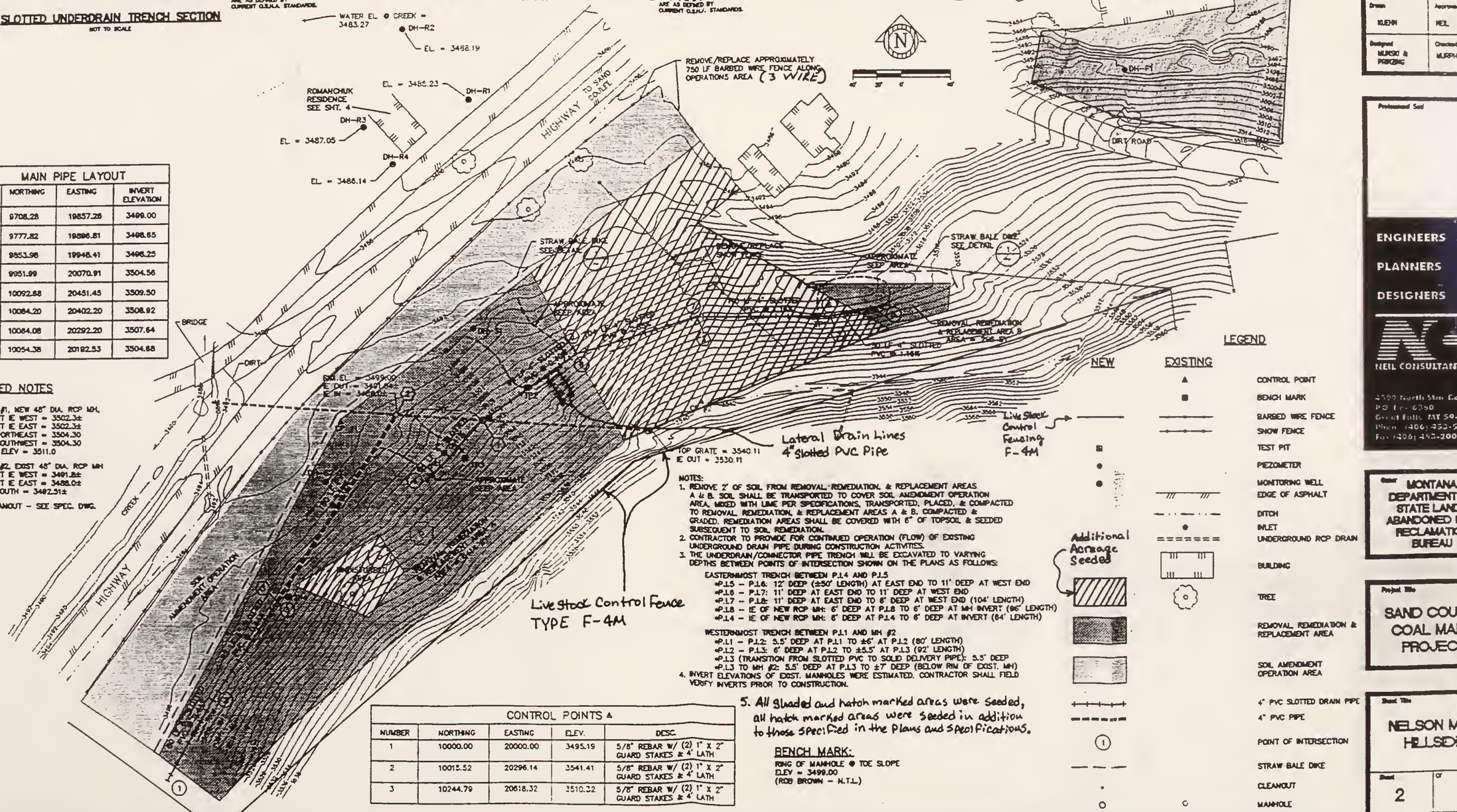


STRAW BALE DIKE DETAIL 1/2

MAIN PIPE LAYOUT			
P.I.	NORTHING	EASTING	INVERT ELEVATION
1	9708.28	19857.28	3499.00
2	9777.82	19896.81	3498.65
3	9853.98	19948.41	3498.25
4	9951.99	20070.91	3504.56
5	10092.88	20451.45	3509.50
6	10084.20	20402.20	3508.92
7	10084.08	20292.20	3507.64
8	10054.38	20192.53	3504.68

KEYED NOTES

1. MH #1, NEW 48" DIA. RCP MH,
   EXIST IE WEST = 3502.3±
   EXIST IE EAST = 3502.3±
   IE NORTHEAST = 3504.30
   IE SOUTHWEST = 3504.30
   RIM ELEV = 3511.0
2. MH #2, EXIST 48" DIA. RCP MH
   EXIST IE WEST = 3491.8±
   EXIST IE EAST = 3488.0±
   IE SOUTH = 3492.51±
3. CLEANOUT - SEE SPEC. DWG.


WATER EL @ CREEK = 3483.27
DH-R2
EL = 3488.19
EL = 3486.23
DH-R1
ROMANCHUK RESIDENCE SEE SHT. 4
DH-R3
EL = 3487.05
DH-R4
EL = 3486.14
HIGHWAY TO SAND COULEE
REMOVE/REPLACE APPROXIMATELY 750 LF BARBED WIRE FENCE ALONG OPERATIONS AREA (3 WIRE)
N
FIRE HALL BUILDING
SEE SHT. 3 FOR SLOPE CONTOURS & GRADING @ FIREHALL BUILDING
DH-P1
DIRT ROAD
STRAW BALE DIKE SEE DETAIL
APPROXIMATE SEEP AREA
REMOVAL, REMEDIATION & REPLACEMENT AREA B AREA = 7565 SY
30 LF 4" SLOTTED PVC @ 1.46%
BRIDGE
DIRT
CREEK
HIGHWAY
SOIL AMENDMENT OPERATION AREA
REMOVAL, REMEDIATION & REPLACEMENT AREA A AREA = 1,200 SY
COL EL = 3499.00
IE OUT = 3491.64±
IE IN = 3492.51±
TOP GRATE = 3540.11
IE OUT = 3530.11
Lateral Drain Lines 4" Slotted PVC Pipe
Live Stock Control Fencing F-4M
Live Stock Control Fence TYPE F-4M

NOTES:
1. REMOVE 2' OF SOIL FROM REMOVAL, REMEDIATION, & REPLACEMENT AREAS A & B. SOIL SHALL BE TRANSPORTED TO COVER SOIL AMENDMENT OPERATION AREA, MIXED WITH LIME PER SPECIFICATIONS, TRANSPORTED, PLACED, & COMPACTED TO REMOVAL, REMEDIATION, & REPLACEMENT AREAS A & B, COMPACTED & GRADED. REMEDIATION AREAS SHALL BE COVERED WITH 6" OF TOPSOIL & SEEDED SUBSEQUENT TO SOIL REMEDIATION.
2. CONTRACTOR TO PROVIDE FOR CONTINUED OPERATION (FLOW) OF EXISTING UNDERGROUND DRAIN PIPE DURING CONSTRUCTION ACTIVITIES.
3. THE UNDERDRAIN/CONNECTOR PIPE TRENCH WILL BE EXCAVATED TO VARYING DEPTHS BETWEEN POINTS OF INTERSECTION SHOWN ON THE PLANS AS FOLLOWS:

   EASTERNMOST TRENCH BETWEEN P.I.4 AND P.I.5
   - P.I.5 – P.I.6: 12' DEEP (±50' LENGTH) AT EAST END TO 11' DEEP AT WEST END
   - P.I.6 – P.I.7: 11' DEEP AT EAST END TO 11' DEEP AT WEST END
   - P.I.7 – P.I.8: 11' DEEP AT EAST END TO 6' DEEP AT WEST END (104' LENGTH)
   - P.I.8 – IE OF NEW RCP MH: 6' DEEP AT P.I.8 TO 6' DEEP AT MH INVERT (96' LENGTH)
   - P.I.4 – IE OF NEW RCP MH: 6' DEEP AT P.I.4 TO 6' DEEP AT INVERT (64' LENGTH)

   WESTERNMOST TRENCH BETWEEN P.I.1 AND MH #2
   - P.I.1 – P.I.2: 5.5' DEEP AT P.I.1 TO ±6' AT P.I.2 (80' LENGTH)
   - P.I.2 – P.I.3: 6' DEEP AT P.I.2 TO ±5.5' AT P.I.3 (92' LENGTH)
   - P.I.3 (TRANSITION FROM SLOTTED PVC TO SOLID DELIVERY PIPE): 5.5' DEEP
   - P.I.3 TO MH #2: 5.5' DEEP AT P.I.3 TO ±7' DEEP (BELOW RIM OF EXIST. MH)
4. INVERT ELEVATIONS OF EXIST. MANHOLES WERE ESTIMATED. CONTRACTOR SHALL FIELD VERIFY INVERTS PRIOR TO CONSTRUCTION.
5. All shaded and hatch marked areas were seeded, all hatch marked areas were seeded in addition to those specified in the Plans and Specifications.

CONTROL POINTS ▲				
NUMBER	NORTHING	EASTING	ELEV.	DESC.
1	10000.00	20000.00	3495.19	5/8" REBAR W/ (2) 1" X 2" GUARD STAKES @ 4' LATH
2	10015.52	20296.14	3541.41	5/8" REBAR W/ (2) 1" X 2" GUARD STAKES @ 4' LATH
3	10244.79	20618.32	3510.32	5/8" REBAR W/ (2) 1" X 2" GUARD STAKES @ 4' LATH

BENCH MARK:
RING OF MANHOLE @ TOE SLOPE
ELEV = 3499.00
(ROB BROWN – N.T.L.)

LEGEND

NEW	EXISTING	
	▲	CONTROL POINT
	■	BENCH MARK
		BARBED WIRE FENCE
		SNOW FENCE
■		TEST PIT
●		PIEZOMETER
●		MONITORING WELL
		EDGE OF ASPHALT
		DITCH
●		INLET
		UNDERGROUND RCP DRAIN
		BUILDING
		TREE
		REMOVAL, REMEDIATION & REPLACEMENT AREA
		SOIL AMENDMENT OPERATION AREA
		4" PVC SLOTTED DRAIN PIPE
		4" PVC PIPE
①		POINT OF INTERSECTION
		STRAW BALE DIKE
●	○	CLEANOUT
○	○	MANHOLE

Additional Acreage Seeded

AS-BUILT

Revisions	By	Date

File No. FILE NO	Job No. 9400 9400SC-2
Date SEPT. 25, 1994	Scale AS SHOWN
Drawn KUEHN	Approved NEIL
Designed MURSKI & PINKERING	Checked MURPHY

Professional Seal

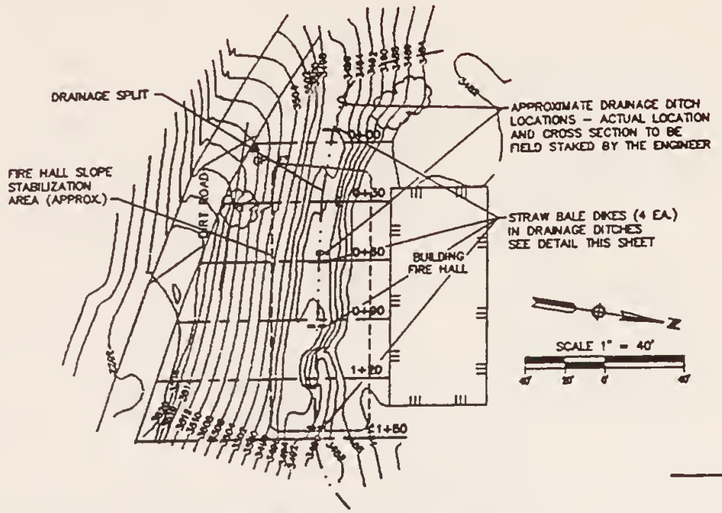
ENGINEERS
PLANNERS
DESIGNERS
NEIL CONSULTANTS, INC.
4700 North Star Boulevard
P.O. Box 6350
Great Falls, MT 59406
Phone: (406) 453-5478
Fax: (406) 453-2009

Owner: MONTANA DEPARTMENT OF STATE LANDS ABANDONED MINE RECLAMATION BUREAU

Project Title: SAND COULEE COAL MAINT. PROJECT

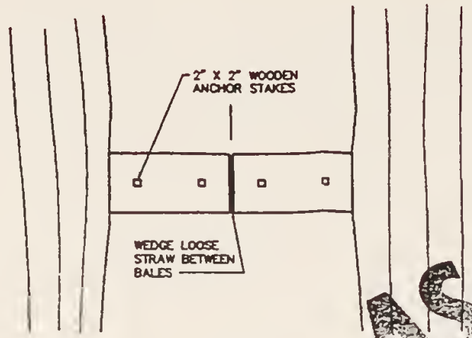
Sheet Title: NELSON MINE HILLSIDE

Sheet 2 of 5

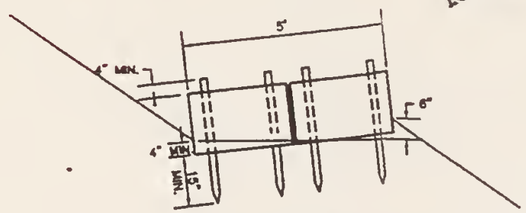

DRAINAGE SPLIT
APPROXIMATE DRAINAGE DITCH LOCATIONS – ACTUAL LOCATION AND CROSS SECTION TO BE FIELD STAKED BY THE ENGINEER
FIRE HALL SLOPE STABILIZATION AREA (APPROX.)
DIRT ROAD
STRAW BALE DIKES (4 EA.) IN DRAINAGE DITCHES SEE DETAIL THIS SHEET
BUILDING FIRE HALL
0+00
0+50
1+00
1+50
SCALE 1" = 40'

——— - Final Reclaimed Slope

FIRE HALL SLOPE
APPROXIMATE EXISTING TOPOGRAPHY



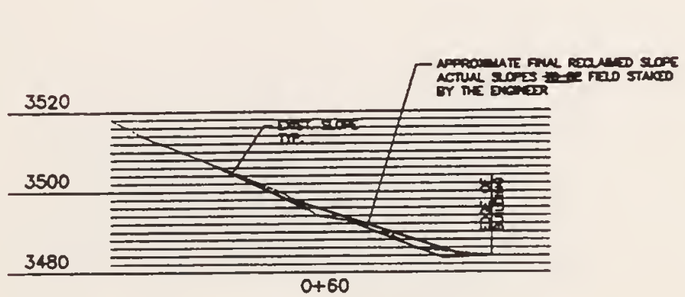
PLAN

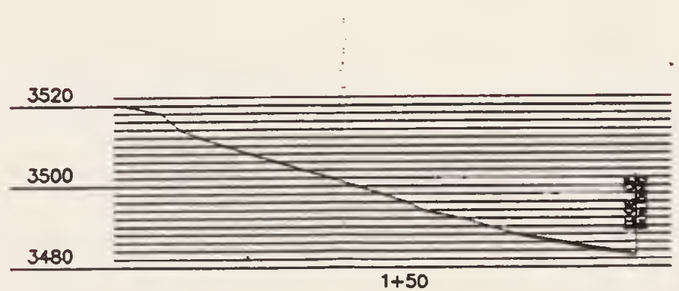


ELEVATION

STRAW BALE DIKE DETAIL

AS-BUILT





FIRE HALL SLOPE
APPROXIMATE EXISTING TOPOGRAPHY
CROSS SECTIONS
SCALE: 1" = 20' HORIZ. & VERT.

FIRE HALL SLOPE RECLAMATION NOTES:

1. THE SLOPE SOUTH OF THE FIREHALL IS TO BE RESHAPED AND STABILIZED BY THE FOLLOWING PROCEDURE:
   - A. REGRADE (UNCLASSIFIED EXCAVATION CUT & FILL) THE EXISTING SOILS AND/OR SPOILS MATERIALS AS FIELD STAKED BY THE ENGINEER.
   - B. PROVIDE IMPORTED FILL SOILS CONSISTING OF CLAYEY SAND/GRAVEL MIXTURES WITH UNITED SOIL CLASSIFICATION DESIGNATIONS OF GW–GC/GM, GP–GC/GM, GC–GM, SW–SC/SM, SP–SC/SM, SC–SM OR CL. THE IMPORTED FILL IS TO BE PLACED IN UNIFORM LIFTS AND COMPACTED TO A MINIMUM DENSITY OF 90% OF THE MAXIMUM AASHTO T–99 DRY DENSITY AT ±3% OF OPTIMUM MOISTURE CONTENT. SLOPE CONTOUR TO RESULT FROM THE IMPORTED FILL PLACEMENT WILL BE FIELD STAKED BY THE ENGINEER.
   - C. PROVIDE & PLACE A 6 INCH THICKNESS OF TOPSOIL ON SLOPE PRODUCED BY ITEM B ABOVE.
   - D. FERTILIZE, SEED & MULCH T/E TOPSOILED SLOPE.
2. DRAINAGE DITCHES WILL BE FIELD STAKED BY THE ENGINEER WHICH WILL CONNECT THE RECLAIMED FIRE HALL SLOPE TO EXISTING TOPOGRAPHY BOTH NE & NW OF THE RECLAIMED SLOPE. THE DRAINAGE DITCHES WILL TYPICALLY BE 1' TO 2' DEEP, LESS THAN 2' WIDE AND WILL BE TOPSOILED, FERTILIZED, SEEDED, & MULCHED. TOTAL DRAINAGE DITCH LENGTH WILL BE ON THE ORDER OF 200 FT. THE UNCLASSIFIED EXCAVATION, THE TOPSOIL PROVISION/PLACEMENT, AND THE FERTILIZE, SEED & MULCH ITEMS ARE PART OF THE FIREHALL SLOPE CONSTRUCTION ITEM QUANTITIES WITH ACTUAL QUANTITIES USED TO BE FIELD MEASURED BY THE ENGINEER.
3. After reshaping and stabilizing the Fire Hall Slope, 102 cubic yards of Imported Fill soils were placed on the slope. Imported topsoil materials were placed on the slope to establish the Final slope. (per Item 1)

Revisions	By	Date

File No.	Job No.
FILE NO	9400 9400SC-3
Date	Scale
SEPT. 28, 1984	AS SHOWN
Drawn	Approved
KUEHN	NEIL
Designed	Checked
MUNSKI & PARKKINEN	MURPHY

Professional Seal

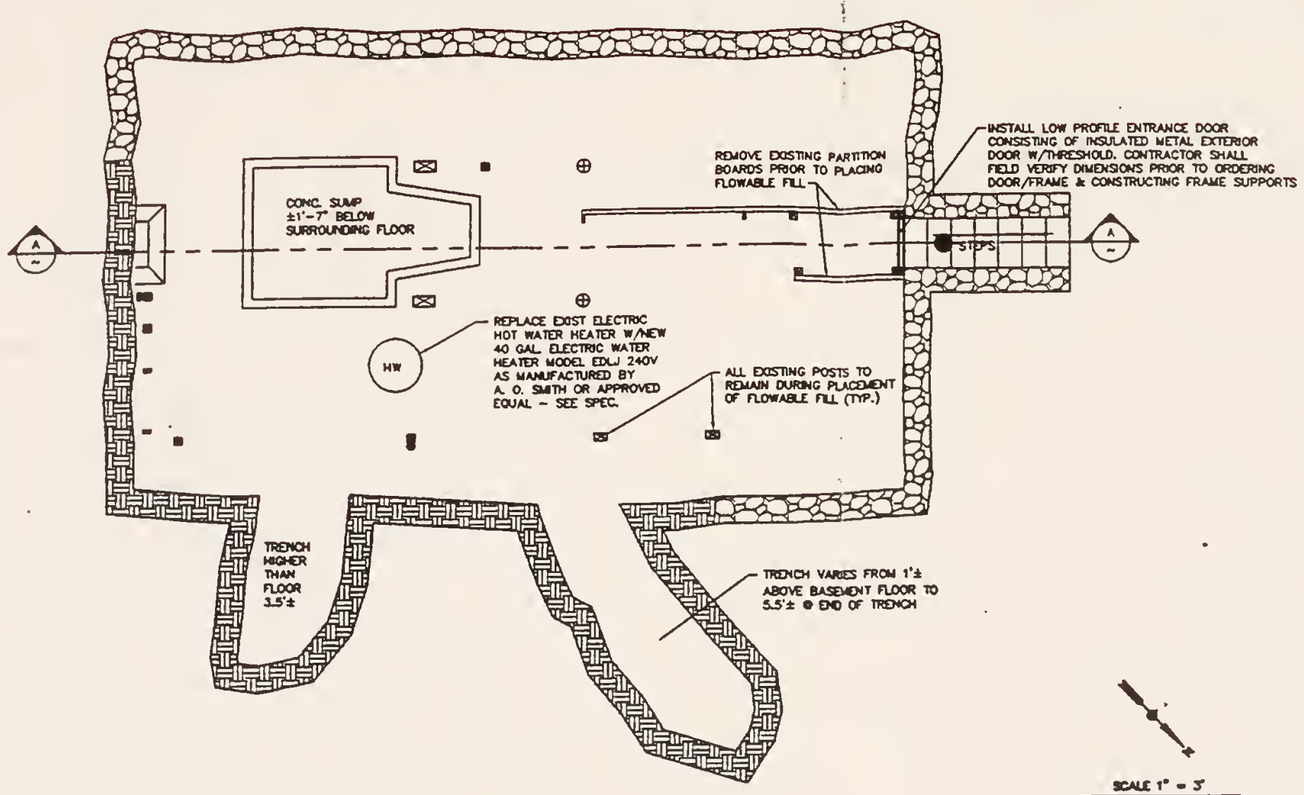
ENGINEERS
PLANNERS
DESIGNERS
NEIL CONSULTANTS, INC.
4709 North Star Boulevard
P.O. Box 6230
Great Falls, MT 59406
Phone: (406) 453-5373
Fax: (406) 452-2009

Owner
MONTANA DEPARTMENT OF STATE LANDS ABANDONED MINE RECLAMATION BUREAU

Project Title
SAND COULEE COAL MAINT. PROJECT

Sheet Title
SAND COULEE FIRE HALL SLOPE STABILIZATION

Sheet 3 of 5

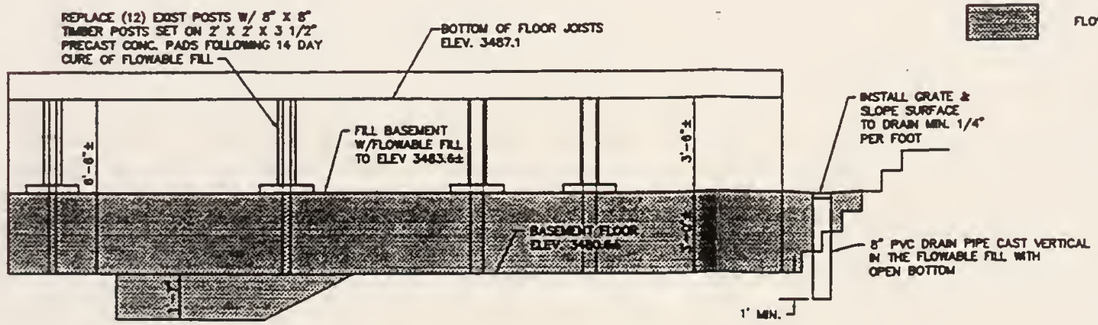


PLAN VIEW

SCALE 1" = 3'

LEGEND

- SUPPORT POST
- ROCK WALL
- EARTH
- HW — HOT WATER HEATER
- FLOWABLE FILL



SECTION A-A

NOTES:
1. NEW WATER HEATER IS TO BE INITIALLY SUPPORTED BY A TEMPORARY PLATFORM SUSPENDED FROM THE FLOOR JOISTS APPROXIMATELY 6" ABOVE THE TOP OF FLOWABLE FILL ELEVATION. AFTER A 14 DAY CURE PERIOD FOR THE FLOWABLE FILL, THE WATER HEATER IS TO BE PERMANENTLY SET ON A 4" THICK PRECAST CONCRETE PAD RESTING ON THE FLOWABLE FILL.
2. EXISTING EXTERIOR SLOPING DOOR TO THE BASEMENT IS TO REMAIN.

AS-BUILT

Revisions	By	Date

File No.	Job No.
FILE NO	9400 9400SC-4
Date	Scale
SEPT. 28, 1994	AS NOTED
Drawn	Approved
LED	NEIL
Designed	Checked
MURSKI & PRINZING	McGILLVRAY

Professional Seal

ENGINEERS
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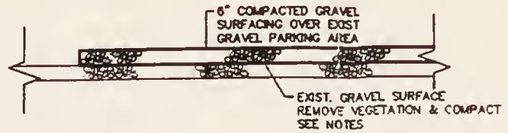
Owner
MONTANA DEPARTMENT OF STATE LANDS ABANDONED MINE RECLAMATION BUREAU

Project Title
SAND COULEE COAL MAINT. PROJECT

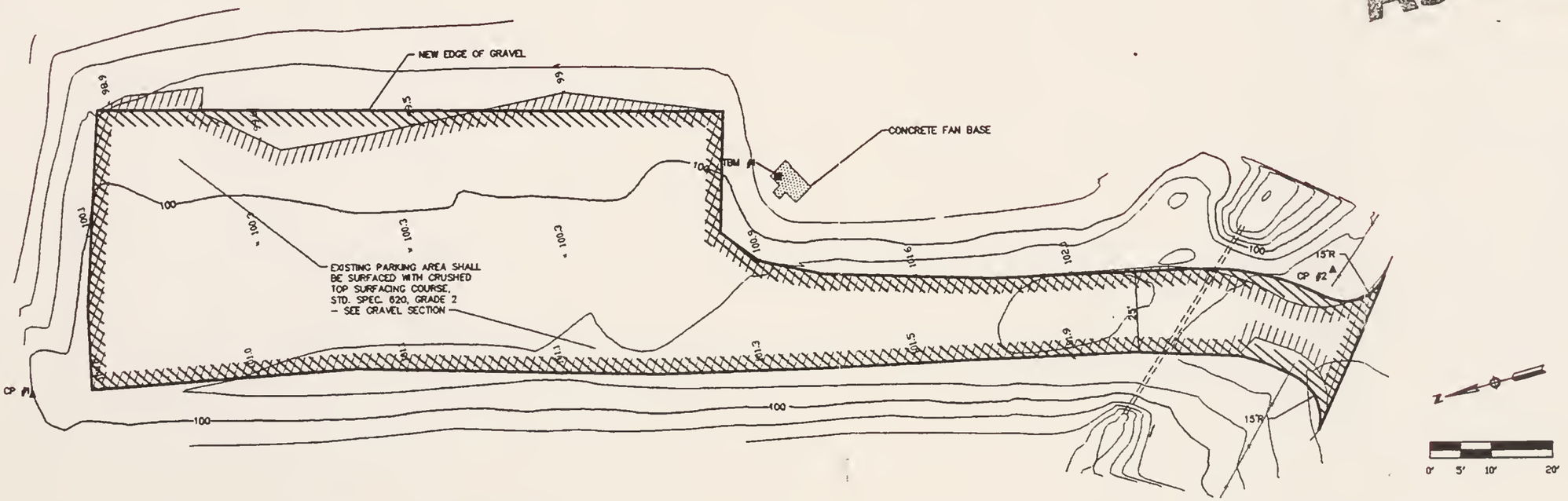
Sheet Title
ROMANCHUK RESIDENCE

Sheet 4 of 5


6" COMPACTED GRAVEL SURFACING OVER EXIST GRAVEL PARKING AREA
EXIST. GRAVEL SURFACE REMOVE VEGETATION & COMPACT SEE NOTES

GRAVEL SURFACE SECTION

AS-BUILT


NEW EDGE OF GRAVEL
CONCRETE FAN BASE
TBM #1
EXISTING PARKING AREA SHALL BE SURFACED WITH CRUSHED TOP SURFACING COURSE, STD. SPEC. 620, GRADE 2 – SEE GRAVEL SECTION
CP #1
CP #2
15'R
100
0' 5' 10' 20'

CONTROL POINTS ▲				
#	NORTHING	EASTING	ELEV.	DESC.
1.	10,000.00	20,000.00	100.00	1/2" REBAR @ N. END OF PARKING LOT
2.	9583.497	19926.584	102.37	1/2" REBAR @ S. END OF PARKING LOT

■ BENCH MARK:

TBM #1: NORTH ANCHOR BOLT ON PARKING LOT SIDE ELEV. = 99.08'

NOTES:
1. BLADE EXIST PARKING AREA TO REMOVE ISOLATED VEGETATION & PROOF ROLL EXIST. SURFACE TO A COMPACTED DENSITY OF 95% OF MAXIMUM AASHTO T-99 DRY DENSITY.
2. COMPACT NEW GRAVEL SURFACING TO AT LEAST 95% OF THE MAXIMUM AASHTO T-99 DRY DENSITY.

LEGEND

EXIST NEW

GRAVEL SURFACE

Revisions	By	Date

File No. FILE NO	Job No. 9400 9400SC-5
Date SEPT. 28, 1994	Scale AS SHOWN
Drawn LEO	Approved NEIL
Designed MURSKI & PANCERO	Checked MURPHY

Professional Seal

ENGINEERS
PLANNERS
DESIGNERS
NEIL CONSULTANTS INC.
4305 S. 74th St., Suite 1, Billings, MT 59106
PO Box 23160
Great Falls, MT 59406
Phone: 406-453-5478
Fax: 406-453-2009

Owner: MONTANA DEPARTMENT OF STATE LANDS ABANDONED MINE RECLAMATION BUREAU

Project Title: SAND COULEE COAL MAINT. PROJECT

Sheet Title: CENTERVILLE PARKING LOT

Sheet 5 of 5

ATTACHMENT 6

PHOTOGRAPHS AND SLIDES

PHOTO #	DESCRIPTION
1.	Nelson Mine slope pre-reclamation.
2.	AMD seep area - north section of slope.
3.	AMD erosion rills at seep location - Nelson Mine slope.

1

2

3

PHOTO #	DESCRIPTION
4.	Flowable fill placement from outside - Romanchuk's residence.
5.	Romanchuk basement immediately after fill placement.
6.	Basement stairway.
7.	Basement view - new water heater on stand to the left.

6

7

4

5

10

11

8

9

PHOTO #	DESCRIPTION
8.	Centerville Miner's Park parking lot prior to grading/gravel application.
9.	Placing ¾ - inch crushed top surface on Miner's Park parking lot.
10.	Limestone amendment mixing at toe of Nelson Mine Slope.
11.	Installation of underdrain - Nelson Mine Slope.

PHOTO #	DESCRIPTION
12.	Firehall slope after seeding and mulch crimping. March 1995
13.	Firehall - view from behind station following topsoiling.
14.	Firehall - same view after seeding and mulching. March 17, 1995
15.	Revegetation as of June 12, 1995.

12

13

16

17

18

PHOTO #	DESCRIPTION
16.	Firehall slope uphill from bench after seeding and mulching. March 17, 1995
17.	Same view - Revegetation success.
18.	Spoil cut on bench. June 12, 1995. Seen in Photo 12 as shadow above road in right center and in Photo 15 as barren spot just above upper bale erosion barrier.

PHOTO #	DESCRIPTION
19.	Nelson Mine slope after seeding and mulching. View south. March 17, 1995
20.	Same view slightly upslope showing revegetation and contour furrows from crimper. June 12, 1995
21.	Nelson Mine slope - view to the southwest. June 12, 1995

19

20

21

22
8 12 95

23

24
8 12 95

PHOTO #	DESCRIPTION
22.	Northernmost slope area with underdrain showing revegetation. June 12, 1995 (same view as in Photo #11).
23.	View downslope on revegetated spoils slope showing several sparsely vegetated areas.
24.	Next view right (north) from Photo #23.

PHOTO #	DESCRIPTION
25.	Crimping mulch on steep slope using trackhoe.
26.	Straw crimping - narrow tracks are from 4 wheeler ATV used for seeding.
27.	Close-up of straw crimper.

25

26

27

28

30

29

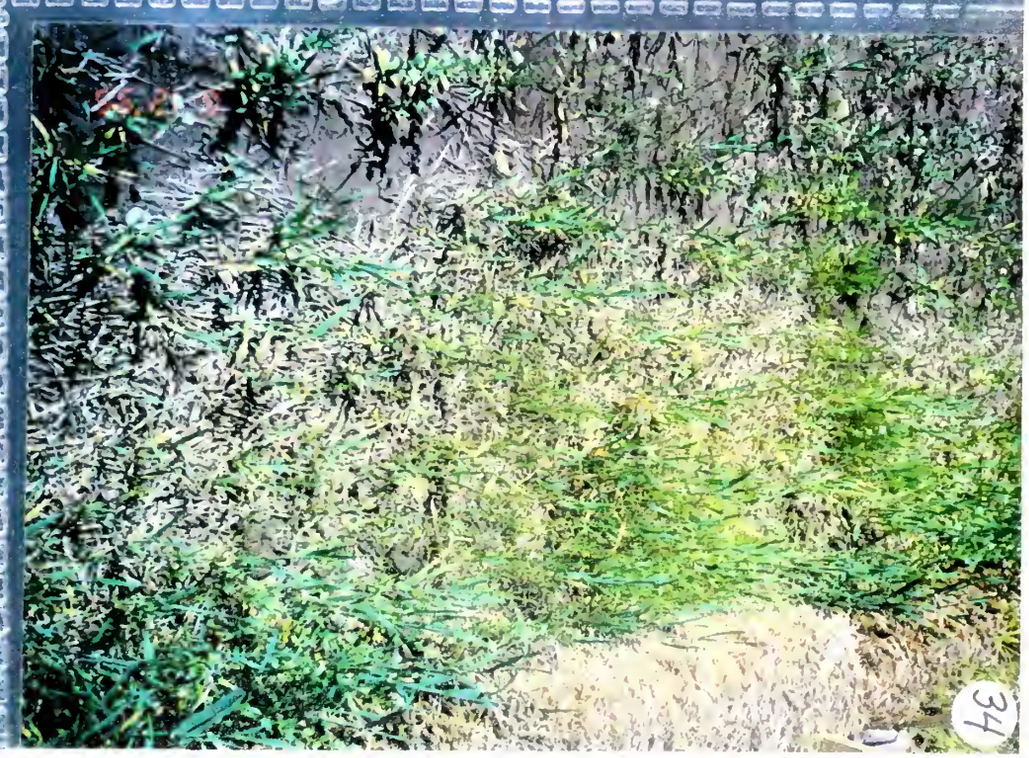
PHOTO #	DESCRIPTION
28.	Reshaped slope - view northeast showing north ⅓ of reclaimed Nelson Mine slope.
29.	Revegetation - view northeast of north ½ of reclaimed slope.
30.	Grass success in "typical" area showing minimal cover.

PHOTO #	DESCRIPTION
31.	Southernmost section of slope. View southeast.
32.	Bottom of slope - work area with remnant low resulting in a pond - will need regrading/filling and seeding.
33.	View of significant weeds infestation of common Pennycress at bottom of Nelson Mine slope.
34.	Revegetation/grass distribution along erosion control bales at bottom of Nelson Mine slope. It appears significant erosion of seeds and topsoil resulted from very intense precipitation events.

31

32

33


34

ATTACHMENT 7

FLOWABLE FILL STRENGTH TESTS

ENGINEERING & GEOSCIENCE, INC.
1505 14th ST. S.W. • P.O. Box 3269 • Great Falls, MT 59403-3269 • (406) 453-5400

REPORT OF CONCRETE COMPRESSIVE STRENGTH TEST

REPORT TO: TETRA TECH, INC.
2969 AIRPORT ROAD
HELENA, MT 59620

(2)
RECEIVED
MAR 2 9 1995
Ans'd.....

DATE: March 27, 1995

PROJECT: Sand Coulee Abandoned Mine Reclamation

JOB NO.: 94-57-1
INVOICE NO.: To Follow

DESCRIPTION: Romanchuk Residence, Flowable Fill 5th Truck

MATERIALS AND BATCH INFORMATION PROVIDED BY CONCRETE SUPPLIER

SUPPLIER: United Materials
BATCH TIME: 2:15 AM
BATCH VOLUME(CY): 10.0
ADMIXTURES: AES, Fly Ash

MIX ID: N/R
SACKS PER CY: N/R
CEMENT: Ashgrove Type I & II
AGG. SOURCE: Own

REQUIRED STRENGTH (PSI)
7 DAY: N/R
28 DAY: 500

FIELD TEST DATA

FIELD TESTS BY: JWA/NTL
TIME CAST: 3:45 PM
CURING: 1 day field then lab

TRUCK NO.: 215
AIR CONTENT(%): 5.6
SLUMP(IN): 10

AIR TEMP: 52°
CONC. TEMP: 50°

LABORATORY CYLINDER NO.	DATE CAST	AGE (DAYS)	DATE TESTED	MAXIMUM LOAD (LBS-FORCE)	AREA (IN^2)	COMPRESSIVE STRENGTH (PSI)
2686-01	12/27/94	14	01/10/95	9,300	28.49	330
2686-02	12/27/94	28	01/24/95	18,150	28.40	640
2686-03	12/27/94	28	01/24/95	16,850	28.42	590
2686-04	12/27/94	90	03/27/95	35,000	28.41	1230
2686-05	12/27/94	HOLD	HOLD			
2686-06	12/27/94	HOLD	HOLD			

Laboratory tests are in accordance with applicable ASTM or AASHTO methods unless otherwise noted. Sulphur caps are used as described by ASTM C39 or, alternatively, neoprene caps are used as described by AASHTO T22-90. Fractures are conical unless otherwise noted.

REMARKS: *Cured in molds at 70°F.

REVIEWED BY: Kenneth D. Murnek

All reports of test results are submitted as confidential property of our client. Any reproduction or publication of partial reports requires our expressed approval. Samples are disposed of after testing is completed, unless other prior arrangements are made.

SUMMARY OF CONCRETE SLUMP AND AIR CONTENT TESTS

ABANDONED MINE RECLAMATION
SAND COULEE, MONTANA

TETRA TECH, INC.
Job No. 94-57-1

Date	Truck No.	Supp. Inv. No.	Batch Time	Placement Time Start/End	Batch Volume CY	Air Temp	Concrete Temp	Slump	Air Content %	Location	Remarks
1[illegible]7/94	217	N/R	11:30	12:15/12:45	10.0	52°	50°	9½"	7.5	Romanchuk Residence Basement	
12/24/94	215	N/R	12:45	1:30/1:45	10.0	52°	--	--	6.0	Romanchuk Residence Basement	
12/24/94	217	N/R	1:15	2:00/2:15	10.0	52°	50°	9"	5.2	Romanchuk Residence Basement	
12/24/94	218	N/R	1:50	2:40/2:45	10.0	--	--	--	--	Romanchuk Residence Basement	
12/24/94	215	N/R	2:15	3:00/3:15	10.0	52°	50°	10"	5.6	Romanchuk Residence Basement	6 Cylinders Cast

ATTACHMENT 8

CHEMICAL ANALYSES OF IMPORTED TOPSOIL AND ACID/BASE - LIME REQUIREMENT ANALYSIS FOR NELSON MINE SPOILS

ENGINEERING &
GEOSCIENCE, INC.

1505 14th ST. S.W. • P.O. Box 3269 • Great Falls, MT 59403-3269 • (406) 453-5400

RECEIVED
MAR 0 8 1995
Ans'd.....

March 6, 1995

Tetra Tech, Inc.
2969 Airport Road
Helena, Montana 59601

Attention: Mr. Earl Griffith

Subject: Sand Coulee AMR Maintenance Project
Materials Submittal

Gentlemen:

On February 2, 1995, our personnel sampled imported cover soil material to be used on the Nelson Mine Slope. A sample was taken so that a soil analysis test could be performed by our laboratory, and by Energy Laboratories, Inc. of Billings, Montana. The aforementioned test results are required to determine the acceptability of the material as a cover soil, and to aid in the determination of fertilizer types and quantities. Please find attached the aforementioned test results for your review, and for fertilizer type and quantity analysis.

Please call if you have any questions regarding these test results.

Sincerely,

Kenneth D. Munski, P.E.
Sr. Materials Engineer

KDM/tp
Enclosures

ENGINEERING & GEOSCIENCE, INC.
1505 14th ST. S.W. • P.O. Box 3269 • Great Falls, MT 59403-3269 • (406) 453-5400

REPORT TO: DEBUFF DRILLING
HC 85
P.O. BOX 4314
LEWISTOWN, MT 59457

(2)

DATE: March 2, 1995
JOB NO.: 94-96
SHEET 1 OF 1
INVOICE NO.: 4110

REPORT OF: Sieve Analysis, Chemical Analysis
Imported Cover Material

PROJECT: Sand Coulee Abandoned Mine Reclamation

TEST DESCRIPTION

On February 2, 1995, our personnel sampled in-place imported cover material for the above referenced project. We were instructed to perform a sieve analysis through the 0.0023mm in accordance with ASTM D422, and to send a sample of the material to Energy Laboratories, Inc. for chemical analysis and fertilizer rate recommendation. The test results are presented below and on the attached report from Energy Laboratories, Inc.

TEST RESULTS

Lab No.:	19946	
I.D.	Imported Cover Material	
Screen or Sieve Size	Percent Passing Screen or Sieve Size Shown	Specification Section 310.02
No. 4	100	
No. 10	100	
No. 20	100	
No. 40	99	
No. 80	96	
No. 100	95	
No. 200	90	
0.005	78.8	
0.0023	25.6	

Particle Size (Individual)

Gravel	(Above 2.0mm)	0	0
SAND	(2.0mm to 0.05mm)	21	70 Max.
Silt	(0.05mm to 0.002mm)	53	70 Max.
CLAY	(Less than 0.0023mm)	26	40 Max.

USDA Soil Conservation Service Textural Classification	Silt Loam	
pH	7.5	5.5 - 8.0
ESP	2.21	15 Max.
Soil Saturation	42.8%	25% - 85%
Conductivity, mmhos/cm	3.85	4 Max.
Organic Content, %	2.1	1% - 20%

REVIEWED BY Kenneth D. Manelski

All reports of test results are submitted as confidential property of our client. Any reproduction or publication of partial reports requires our expressed approval. Samples are disposed of after testing is completed unless other prior arrangements are made.

ENERGY LABORATORIES, INC.
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FAX (406) 252-6069 • 1-800-735-4489

LABORATORY REPORT

TO: John Ayers
ADDRESS: NTL Engineering & Geoscience
P.O. Box 3269
Great Falls, MT 59403-3269

LAB NO.: 95-15416
DATE: 02/22/95 jmw

RECEIVED
MAR 0 8 1995
Ans'd.....

SOIL ANALYSIS

94-57, Sand Coulee AMP Project
Sampled 02/02/95 @ 1500
Submitted 02/06/95

Sample Number	15416
Location	Borrow Pit
	19946
pH (1)	7.5
Saturation %	42.8
Cond., mmhos/cm (1)	3.85
Soluble Na, meq/100g	0.61
Extr. Na, meq/100g	1.27
Exch. Na, meq/100g	0.66
CEC, meq/100g	30.1
ESP	2.21
Organic Matter, %	2.1
Nitrate as N, ug/g (2)	21.7
Phosphorus, ug/g (3)	10.2
Potassium, ug/g (4)	263
Lime as CaCO3 %	5.9
Neut. Pot., T/1000 Tons (5)	59
Acid Pot., T/1000 Tons (5)	<1
Acid-Base Pot., T/1000 Tons (5)	59
Total Sulfur, %	<0.01
Hot H2O Extractable Sulfur, %	<0.01
HCL Extractable Sulfur, %	<0.01
HNO3 Extractable Sulfur, %	<0.01
Residual Sulfur, %	<0.01

(1) Saturated Paste Extract
(2) Potassium Chloride Extract
(3) Sodium Bicarbonate Extract
(4) Ammonium Acetate Extract
(5) Tons CaCO3/1000 Tons

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LABORATORY REPORT

TO: John Ayers
ADDRESS: NTL Engineering & Geoscience
P.O. Box 3269
Great Falls, MT 59403-3269

LAB NO.: 95-15416 dup
DATE: 02/22/95 jmw

QUALITY ASSURANCE - DUPLICATE ANALYSIS

94-57, Sand Coulee AMP Project
Sampled 02/02/95 @ 1500
Submitted 02/06/95

Sample Number	15416DUP
Location	Borrow Pit
	19946
pH (1)	7.6
Saturation %	44.1
Cond., mmhos/cm (1)	3.81
Soluble Na, meq/100g	0.63
Extr. Na, meq/100g	1.29
Exch. Na, meq/100g	0.66
CEC, meq/100g	32.4
ESP	2.04
Organic Matter, %	1.9
Nitrate as N, ug/g (2)	22.1
Phosphorus, ug/g (3)	9.8
Potassium, ug/g (4)	268
Lime as CaCO3 %	5.9
Neut. Pot., T/1000 Tons (5)	59
Acid Pot., T/1000 Tons (5)	<1
Acid-Base Pot., T/1000 Tons (5)	59
Total Sulfur, %	<0.01
Hot H2O Extractable Sulfur, %	<0.01
HCL Extractable Sulfur, %	<0.01
HNO3 Extractable Sulfur, %	<0.01
Residual Sulfur, %	<0.01

(1) Saturated Paste Extract
(2) Potassium Chloride Extract
(3) Sodium Bicarbonate Extract
(4) Ammonium Acetate Extract
(5) Tons CaCO3/1000 Tons

RECEIVED FEB 23 1995

ENERGY LABORATORIES, INC.
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LABORATORY REPORT

TO: John Ayers
ADDRESS: NTL Engineering & Geoscience
P.O. Box 3269
Great Falls, MT 59403-3269

LAB NO.: 95-15416
DATE: 02/22/95 jmw

QUALITY ASSURANCE - CONTROL SOIL ANALYSIS

This Quality Assurance - Control Soil Analysis was run with Lab No. 95-15416 with the following results:

Sample Number Location	CONTROL SOIL ANALYSIS	TARGET RANGE
pH (1)	6.5	6.4 - 7.2
Saturation %	36.7	33.9 - 38.1
Cond., mmhos/cm (1)	3.95	2.50 - 4.43
Soluble Na, meq/100g	0.48	0.36 - 0.60
Extr. Na, meq/100g	1.00	0.75 - 1.25
Exch. Na, meq/100g	0.52	0.39 - 0.65
CEC, meq/100g	29.9	25.6 - 35.2
ESP	1.75	1.31 - 2.19
Organic Matter, %	3.3	1.7 - 3.3
Nitrate as N, ug/g (2)	3.4	2.1 - 3.9
Phosphorus, ug/g (3)	3.9	1.5 - 8.6
Potassium, ug/g (4)	110	106 -206
Lime as CaCO3 %	4.7	3.6 - 7.5
Neut. Pot., T/1000 Tons (5)	47	33 - 77
Acid Pot., T/1000 Tons (5)	5	0 - 9
Acid-Base Pot., T/1000 Tons (5)	42	33 - 74
Total Sulfur, %	0.18	0.02 - 0.25
Hot H2O Extractable Sulfur, %	0.02	0.01 - 0.04
HCL Extractable Sulfur, %	<0.01	<0.01
HNO3 Extractable Sulfur, %	0.16	0.01 - 0.20
Residual Sulfur, %	<0.01	<0.01

(1) Saturated Paste Extract
(2) Potassium Chloride Extract
(3) Sodium Bicarbonate Extract
(4) Ammonium Acetate Extract
(5) Tons CaCO3/1000 Tons

RECEIVED FEB 23 1995

Lab Nos. 95-15416

Date 02/06/95

Received by Randa Hoelscher

SAMPLE CONDITION QA/QC REPORT

This report provides information about the condition of the sample(s) and associated sample custody information on receipt at the laboratory.

Chain-of-custody form completed & signed	Yes	Comments:
Chain-of-custody seal properly placed	N/A	Comments: No seal
Chain-of-custody seal intact	N/A	Comments:
Signature Match, Chain-of-custody vs. Seal	N/A	Comments:
Sample received cold	Yes	Comments:
Samples received within holding time	Yes	Comments:
Samples received in proper containers and properly preserved	Yes	Comments:
Client notified about sample discrepancies		Comments:

Who: _____ By: _____ Date/Time: _____

Method of Shipment UPS

NTL Engineering & Geoscience
P.O. Box 3269
1505 14th St. S.W.
Great Falls, MT 59403-3269
(406) 453-5400

CHAIN OF CUSTODY RECORD

RECEIVED FEB 23 1995

Proj. No.: 94-57
Project Name: Sand Coulee AML Project
Samplers:

Sample No.	Date	Time			Location	No. of Containers	Remarks
19946	2-2-95	3:00Pm			Borrow Pit	1	See Attached

Results desired As Soon As possible
No rush charge.

Relinquished by: (Signature)	Date / Time	Rec'd by: (Signature)	Relinquished by: (Signature)	Date / Time	Rec'd by: (Signature)
John W. Ayer	2/2/95 3:00Pm	UPS			
Relinquished by: (Signature)	Date / Time	Rec'd by: (Signature)	Relinquished by: (Signature)	Date / Time	Rec'd by: (Signature)
Relinquished by: (Signature)	Date / Time	Rec'd for laboratory by: (Signature)	Date / Time	Remarks	
		Linda Hoehne	02/06/95 1150		

Sand Coulee

All soil sampling and analysis costs will be included in the price for importing topsoil as covered in the Special Provisions. Cover soil work shall not begin until test results of the soil samples are known.

310.02 MATERIALS

A. ON-SITE AND IMPORTED COVER SOIL (DESIGNATED SOURCE) - Topsoil and subsoil shall be excavated to depths determined by the Engineer from areas designated on the plans. The suitable topsoil and subsoil used as cover soil shall be reasonably free of trash, rocks, hard lumps of soil, stumps, or brush. Noxious weeds shall be pulled and disposed of properly before topsoil stripping. Suitable cover soil shall contain sod or soils with large amounts of humus and other organic materials to promote plant growth. Cover soil suitability will be determined by the Engineer. Suitable soil salvaged shall be stockpiled from unsuitable soil and shall be stored in a manner to prevent erosion or contamination.

B. IMPORTED COVER SOIL (CONTRACTOR SOURCE) - Topsoil to be used as cover soil shall be fertile, friable material of an organic composition and characterized as loam, sandy loam, sandy clay loam, clay loam, silty clay loam, or silt loam in accordance with the USDA Soil Conservation Service textural classification. Topsoil material shall be reasonably free of trash, rocks, hard lumps of soil, stumps, and brush. The Contractor's proposed topsoil source shall not contain any "noxious weeds". If noxious weeds are found on the topsoil source site, the topsoil will be rejected and not used on the project. Clay textured soils with more than 40% clay shall be unsuitable. Topsoil shall meet the following requirements:

TABLE OF TOPSOIL GRADATION REQUIREMENTS

Fraction	Particle Size (mm)	Max. % of Soil (-10 Mesh) Fraction
Sand	0.05 - 2.0 #10	70
Silt	0.002 - 0.05	70
Clay	Less than 0.0023	40
Gravel	Larger than 2.0	*Max % of total sample

* A maximum of 20% of the total soil sample is allowable; however, any quantity greater than 10% will not be included in the basis for payment.

The soil pH shall be between 5.5 and 8.0, except that the maximum limit may be extended to 8.5 if the ESP is less than 10. The soil ESP shall not be greater than 15%. Soil saturation percent will be less than 85% and greater than 25%.

The soil shall have an EC less than 4 mmhos/cm. The organic content of the topsoil shall be within a range of values not less than 1% and not greater than 20%. The ABA shall indicate that no acid-forming materials are present. NO_3, P, and K will be used by the Engineer to verify fertilizer rates. Fertilizer rates specified in the Special Provisions may be changed by the Engineer after receipt of the NO_3, P, and K analyses.

ENERGY LABORATORIES

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LABORATORY REPORT

TO: Earl Griffith
ADDRESS: Tetra Tech
2969 Airport Rd.
Helena, MT 59601

LAB NO.: 94-45969-73
DATE: 10/04/94 lm

SOIL ANALYSIS

Abandoned Mines & Reclamation Bureau
Submitted 09/15/94

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Ans'd.....

Sample No.	45969	45970	45971
Location	Nelson Mine Slope Upgrade of Seep	Nelson Mine Slope Seep	Nelson Mine Slope Downgrade of Seep
Lime Requirement, T/1000 Tons (1)*	8.3	6.0	6.8
Lime, % as CaCO3	<0.1	<0.1	<0.1
Neut. Pot., T/1000 Tons (1)	<1	<1	<1
Acid Pot., T/1000 Tons (1)	10	1	10
Acid/Base Pot., T/1000 Tons (1)	-10	-1	-10
Total Sulfur %	0.44	0.28	0.85
Hot H20 Extractable Sulfur %	0.11	0.24	0.53
HCl Extractable Sulfur %	0.08	0.04	0.09
HNO3 Extractable Sulfur %	0.07	<0.01	0.10
Residual Sulfur, %	0.18	<0.01	0.13

(1) T CaCO3/1000 Tons Soil
* SMP Buffer

ENERGY LABORATORIES

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LABORATORY REPORT

TO: Earl Griffith
ADDRESS: Tetra Tech
2969 Airport Rd.
Helena, MT 59601

LAB NO.: 94-45969-73
DATE: 10/04/94 lm

SOIL ANALYSIS

Abandoned Mines & Reclamation Bureau
Submitted 09/15/94

Sample No.	45972	45973
Location	Nelson Mine Slope South Delta	Nelson Mine Slope North Delta
Lime Requirement, T/1000 Tons (1)*	2.4	<0.1
Lime, % as CaCO3	0.5	3.9
Neut. Pot., T/1000 Tons (1)	5	39
Acid Pot., T/1000 Tons (1)	10	13
Acid/Base Pot., T/1000 Tons (1)	-5	25
Total Sulfur %	1.63	0.73
Hot H20 Extractable Sulfur %	1.30	0.30
HCl Extractable Sulfur %	0.16	<0.01
HNO3 Extractable Sulfur %	0.13	0.10
Residual Sulfur, %	0.04	0.33

(1) T CaCO3/1000 Tons Soil
* SMP Buffer

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LABORATORY REPORT

TO: Earl Griffith
ADDRESS: Tetra Tech
2969 Airport Rd.
Helena, MT 59601

LAB NO.: 94-45970 dup
DATE: 10/04/94 lm

QUALITY ASSURANCE-DUPLICATE ANALYSIS

Abandoned Mines & Reclamation Bureau
Submitted 09/15/94

Sample No.	45970DUP
Location	Nelson Mine Slope
Lime Requirement, T/1000 Tons (1)*	6.0
Lime, % as CaCO3	<0.1
Neut. Pot., T/1000 Tons (1)	<1
Acid Pot., T/1000 Tons (1)	1
Acid/Base Pot., T/1000 Tons (1)	-1
Total Sulfur %	0.28
Hot H20 Extractable Sulfur %	0.24
HCl Extractable Sulfur %	0.04
HNO3 Extractable Sulfur %	<0.01
Residual Sulfur, %	<0.01

(1) T CaCO3/1000 Tons Soil
* SMP Buffer

ENERGY LABORATORIES, INC.
P.O. BOX 30916 • 1107 SOUTH BROADWAY • BILLINGS, MT 59107-0916 • PHONE (406) 252-6325
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LABORATORY REPORT

TO: Earl Griffith
ADDRESS: Tetra Tech
2969 Airport Rd.
Helena, MT 59601

LAB NO.: 94-45969-73
DATE: 10/04/94 lm

QUALITY ASSURANCE-CONTROL SOIL ANALYSIS

This Quality Assurance-Control Soil Analysis was run with your Lab Numbers 94-45969 through 94-45973 with the following results:

Sample No. Location	CONTROL SOIL ANALYSIS	TARGET RANGE
Lime Requirement, T/1000 Tons (1)*	<0.1	
Lime, % as CaCO3	7.4	3.6 - 7.5
Neut. Pot., T/1000 Tons (1)	74	33 - 77
Acid Pot., T/1000 Tons (1)	5	0 - 9
Acid/Base Pot., T/1000 Tons (1)	69	33 - 74
Total Sulfur %	0.18	0.02 - 0.25
Hot H20 Extractable Sulfur %	0.02	0.01 - 0.04
HCl Extractable Sulfur %	<0.01	<0.01
HNO3 Extractable Sulfur %	0.16	0.01 - 0.20
Residual Sulfur, %	<0.01	<0.01

(1) T CaCO3/1000 Tons Soil
* SMP Buffer

ENERGY LABORATORIES, INC.
P.O. Box 30916 1107 South Broadway
Billings, MT 59107

toll-free 800-735-4489
voice 406-252-6325
fax 406-252-6069

CHAIN OF CUSTODY RECORD

PLEASE PRINT OR TYPE ALL INFORMATION EXCEPT SIGNATURES

P.O. # 9949-01

Project Name / Address: Abandoned Mines + Reclamation Bureau

Contact Name & Phone: Earl Corbett 444-3440

Sampler's signature: Douglas A. Mutch

Invoice to: Tetra Tech 2969 Airport Rd Helena, MT 59601

Report to: Same As Above

DATE	TIME	composite	grab sample	SAMPLE I.D.	number of containers	Sample Type: A Air W Water S Soils/solids V Vegetation U Urine O Other	Analysis Requested: Hard Base	Sulfur Form	SMP Buffer	Comments, Special Instructions, etc.
9-13-94	1345	✓		Nelson Mine Slope - Upgrade of Seep	1	S	X	X	X	
9-13-94	1315	✓		Nelson Mine Slope - Seep	1	S	X	X	X	
9-13-94	1300	✓		Nelson Mine Slope - Downgrade of Seep	1	S	X	X	X	
9-13-94	1320	✓		Nelson Mine Slope - South Delta	1	S	X	X	X	
9-13-94	1400	✓		Nelson Mine Slope - North Delta	1	S	X	X	X	

1. Relinquished (signature)	Date	Time	Received by: (signature)	3. Relinquished (signature)	Date	Time	Received by (signature):
Douglas A. Mutch	9-14-94	0900					
2. Relinquished (signature)	Date	Time	Received by: (signature)	4. Relinquished (signature)	Date	Time	Received for laboratory by (signature):
					9/14/94	0900	

ATTACHMENT 9

FIELD DENSITY TESTS
Subgrade and ¾" Crushed Surface Material, Centerville
Miners Park Parking Lot

ENGINEERING & GEOSCIENCE, INC.
1505 14th ST. S.W. • P.O. Box 3269 • Great Falls, MT 59403-3269 • (406) 453-5401

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REPORT TO: TETRA TECH, INC. (2)
ATTN: MR. EARL GRIFFITH
2969 AIRPORT ROAD
HELENA, MT 59601

DATE: February 13, 1995
JOB NUMBER: 94-57-1
SHEET 1 OF 3
INVOICE NO.: To Follow

REPORT OF: Subgrade and 3/4" Crushed Surfacing
Nuclear Field Density Tests

PROJECT: Sand Coulee
Abandoned Mine Reclamation
Centerville Miners Park
Parking Lot

TEST DESCRIPTION

Field density test results for the referenced project are presented on the attached test summary. Test dates and locations are reported, along with the applicable maximum laboratory density. The field density testing and applicable project specifications are further described as follows:

Earthwork Sub Contractor: DeBuff Drilling

Field Density Test Method: Nuclear Densometer ASTM D2922 and D3017

Test Locations selected by: NTL personnel

Minimum specified field density: 95%

Maximum laboratory density determined by: AASHTO T-99

REVIEWED BY Kenneth D. Murnek
JWA

All reports of test results are submitted as confidential property of our client. Any reproduction or publication of partial reports requires our expressed approval. Samples are disposed of after testing is completed unless other prior arrangements are made.
NTL-C-07

Tetra Tech, Inc.
Helena, MT 59403

February 13, 1995
Sheet: 2 of 3
Job No. 94-57-1

TEST SUMMARY

Test Date	Lab No.	Moisture Content,%	Dry Density p.c.f.	Maximum Lab Dry Density p.c.f.	Percent of Maximum Obtained
01/31/95	19948	13.2	110.8	108.3(a)	102.3
Test Location: Parking lot access road, 15' S. & 8' E. of SW corner of parking lot, at subgrade.					
01/31/95	19949	19.7	95.9	98.2(b)	97.6
Test Location: Parking lot access road, 75' S. & 10' E. of SW corner of parking lot, at subgrade.					
01/31/95	19950	4.9	121.3	134.9(c)	89.9
Test Location: Parking lot, 75' N. & 8' W. of SE corner of parking lot, at crushed surfacing grade.					
01/31/95	19951	4.4	122.1	134.9(c)	90.5
Test Location: Retest of #19950.					
02/01/95	19952	4.3	126.3	134.9(c)	93.6
Test Location: Retest of #19950, 19951.					
02/01/95	19953	6.6	125.9	134.9(c)	93.3
Test Location: Parking lot, 28' S. & 25' W. of NE corner of parking lot, at crushed surfacing grade.					
02/01/95	19954	7.8	125.3	134.9(c)	92.9
Test Location: Parking lot, 25' S. & 25' E. of NW corner of parking lot, at crushed surfacing grade.					
02/01/95	19955	8.7	122.3	134.9(c)	90.7
Test Location: Parking lot, 30' N. & 20' E. of SW corner of parking lot, at crushed surfacing grade.					
02/01/95	19956	6.9	125.7	134.9(c)	93.2
Test Location: Parking lot access road, 45' S. & 20' E. of SW corner of parking lot, at crushed surfacing grade.					
02/01/95	19957	6.0	125.4	134.9(c)	93.0
Test Location: Parking lot access road, 125' S. & 19' E. of SW corner of parking lot, at crushed surfacing grade.					

Tetra Tech, Inc.
Helena, MT 59403

February 13, 1995

Job No. 94-57-1

TEST SUMMARY

Test Date	Lab No.	Moisture Content,%	Dry Density p.c.f.	Maximum Lab Dry Density p.c.f.	Percent of Maximum Obtained
02/01/95	19958	4.1	130.8	134.9(c)	97.0
Test Location: Retest of #19950, 19951, 19952.					
02/01/95	19959	8.3	128.4	134.9(c)	95.5
Test Location: Retest of #19953.					
02/01/95	19960	8.1	128.9	134.9(c)	95.6
Test Location: Retest of #19954.					
02/01/95	19961	6.3	132.2	134.9(c)	98.0
Test Location: Retest of #19955.					
02/01/95	19962	7.3	129.7	134.9(c)	96.1
Test Location: Retest of #19956.					
02/02/95	19963	7.9	129.1	134.9(c)	95.7
Test Location: Retest of #19957.					

(a) Moisture Density Curve - Lab No. 19736
(b) Moisture Density Curve - Lab No. 19648
(c) Moisture Density Curve - Lab No. 19736A

ENGINEERING & GEOSCIENCE, INC.
1505 14th ST. S.W • P.O. Box 3269 • Great Falls, MT 59403-3269 • (406) 453-5400

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Ans'd.....

REPORT TO: TETRA TECH, INC.
ATTN: MR. EARL GRIFFITH
2969 AIRPORT ROAD
HELENA, MT 59601

(2)

DATE: March 2, 1995
JOB NUMBER: 94-57-1
SHEET 1 OF 2
INVOICE NO.: To Follow

REPORT OF: Subgrade
Sand Cone Field Density Test

PROJECT: Sand Coulee
Abandoned Mine Reclamation
Centerville Miners Park
Parking Lot

TEST DESCRIPTION

Field density test results for the referenced project are presented on the attached test summary. Test dates and locations are reported, along with the applicable maximum laboratory density. The field density testing and applicable project specifications are further described as follows:

Earthwork Sub Contractor: DeBuff Drilling

Field Density Test Method: Sand Cone Field Density ASTM D1556

Test Locations selected by: NTL personnel

Minimum specified field density: 95%

Maximum laboratory density determined by: AASHTO T-99

REVIEWED BY Kenneth D. Manelski
JWA

All reports of test results are submitted as confidential property of our client. Any reproduction or publication of partial reports requires our expressed approval. Samples are disposed of after testing is completed unless other prior arrangements are made.

Tetra Tech, Inc.
2969 Airport Road
Helena, Montana 59601

March 2, 1995
Sheet: 2 of 2
Job No. 94-57-1

TEST SUMMARY

Test Date	Lab No.	Moisture Content,%	Dry Density p.c.f.	Maximum Lab Dry Density p.c.f.	Percent of Maximum Obtained
01/30/95	19989	12.9	93.2	98.2(a)	94.9

Test Location: Retest of #19748, at final subgrade elevation.

(a) Moisture Density Curve - Lab No. 19648

ENGINEERING & GEOSCIENCE, INC.
1505 14th ST. S.W. • P.O. Box 3269 • Great Falls, MT 59403-3269 • (406) 453-5400

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REPORT TO: TETRA TECH, INC. (2)
ATTN: MR. EARL GRIFFITH
2969 AIRPORT ROAD
HELENA, MT 59601

DATE: March 2, 1995
JOB NUMBER: 94-57-1
SHEET 1 OF 2
INVOICE NO.: To Follow

REPORT OF: Subgrade
Nuclear Field Density Tests

PROJECT: Sand Coulee
Abandoned Mine Reclamation
Centerville Miners Park
Parking Lot

TEST DESCRIPTION

Field density test results for the referenced project are presented on the attached test summary. Test dates and locations are reported, along with the applicable maximum laboratory density. The field density testing and applicable project specifications are further described as follows:

Earthwork Sub Contractor: DeBuff Drilling

Field Density Test Method: Nuclear Densometer ASTM D2922 and D3017

Test Locations selected by: NTL personnel

Minimum specified field density: 95%

Maximum laboratory density determined by: AASHTO T-99

REVIEWED BY Kenneth D. Manely

All reports of test results are submitted as confidential property of our client. Any reproduction or publication of partial reports requires our expressed approval. Samples are disposed of after testing is completed unless other prior arrangements are made.
NTL-C-07

Tetra Tech, Inc.
Helena, MT 59403

March 2, 1995
Sheet: 2 of 2
Job No. 94-57-1

TEST SUMMARY

Test Date	Lab No.	Moisture Content,%	Dry Density p.c.f.	Maximum Lab Dry Density p.c.f.	Percent of Maximum Obtained
1/30/95	19988	16.3	103.6	108.3(a)	95.7

Test Location: Retest of #19747.

(a) Moisture Density Curve - Lab No. 19648

ATTACHMENT 10

MOISTURE DENSITY RELATIONSHIP TESTS
(AASHTO T-99)
Centerville Miners Parking Lot Subgrade Material

ENGINEERING & GEOSCIENCE, INC.
1505 14th ST. S.W. • P.O. Box 3269 • Great Falls, MT 59403-3269 • (406) 453-5400

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Ans'd.....

REPORT TO: TETRA TECH (2)
ATTN: MR. EARL GRIFFITH
2969 AIRPORT ROAD
HELENA, MT 59601

DATE: January 11, 1995
JOB NUMBER: 94-57-1
SHEET 1 OF 2
INVOICE NO.: To Follow

REPORT OF: Centerville Parking Lot

PROJECT: Sand Coulee
Abandoned Mine Reclamation

TEST DESCRIPTION

On December 30, 1994, a sample of subgrade material was sampled by our personnel. We were instructed to perform a moisture-density relationship test in accordance with AASHTO T-99. The results of the laboratory tests are presented on the attached graph entitled "Moisture Density Relationship".

REVIEWED BY Kenneth D. Mundell

All reports of test results are submitted as confidential property of our client. Any reproduction or publication of partial reports requires our expressed approval. Samples are disposed of after testing is completed unless other prior arrangements are made.
NTL-C-07

Job No. 94-57 Date 1/4/95

Project TETRA TECH INC. - SAND COULEE ABANDONED MINE RECLAMATION

Source of Material CENTERVILLE PARKING LOT ACCESS

Lab No. 19736

Point ID and Depth SUBGRADE

Description of Material SILTY CLAYEY SAND (SC-SM)

Test Method AASHTO T99 METHOD A

Rammer Type Manual, 5.5#

TEST RESULTS

Maximum Dry Density 108.3 PCF

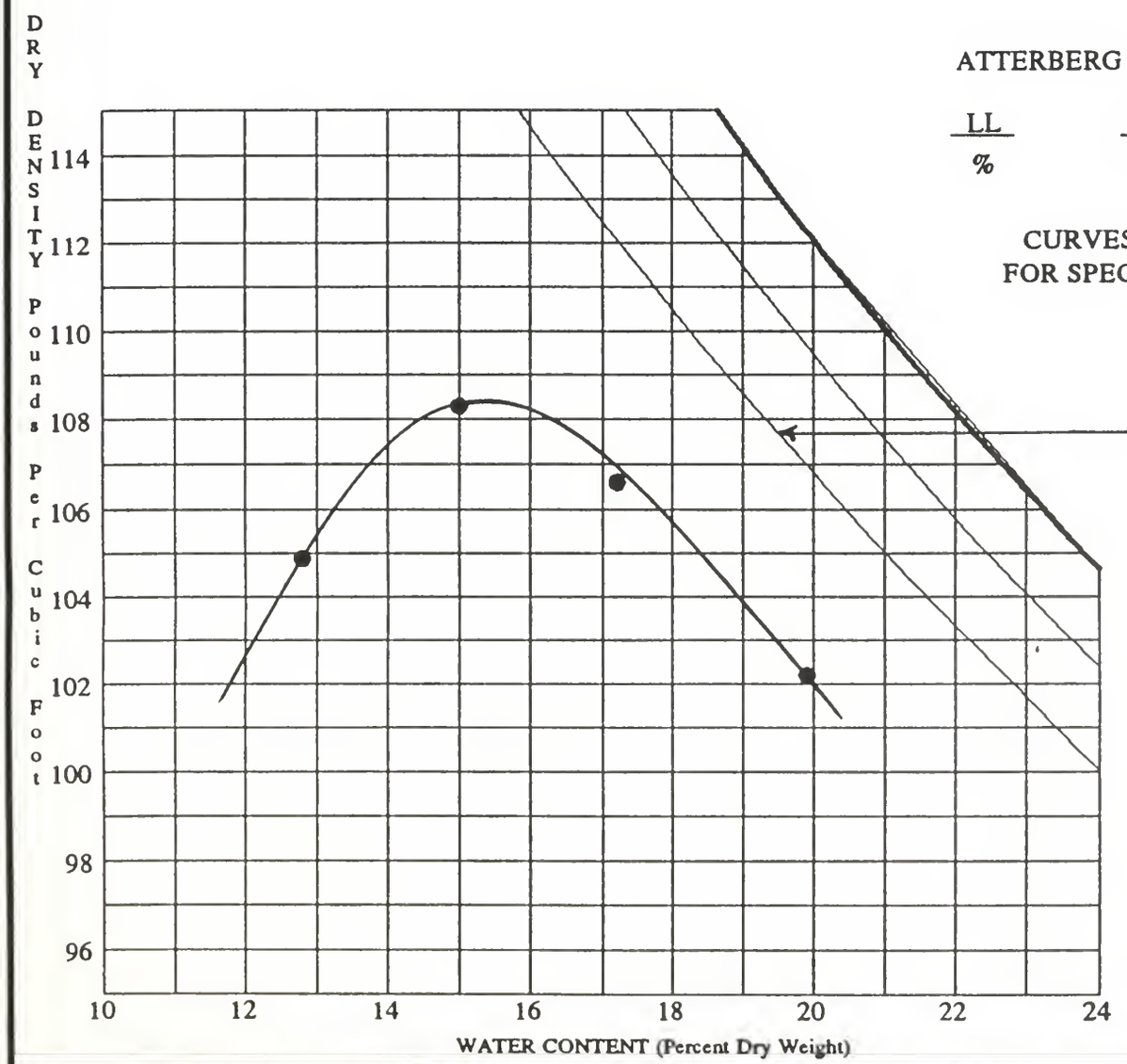
Optimum Water Content 15.5 %

ATTERBERG LIMITS

LL	PL	PI
%	%	%

CURVES OF 100% SATURATION FOR SPECIFIC GRAVITY EQUAL TO:

2.60



MOISTURE-DENSITY RELATIONSHIP

NTL Engineering & Geoscience

Great Falls, Montana

ENGINEERING & GEOSCIENCE, INC.
1505 14th ST. S.W. • P.O. Box 3269 • Great Falls, MT 59403-3269 • (406) 453-5400

RECEIVED
JAN 13 1995
Acct.....

REPORT TO: TETRA TECH (2)
ATTN: MR. EARL GRIFFITH
2969 AIRPORT ROAD
HELENA, MT 59601

DATE: January 11, 1995
JOB NUMBER: 94-57-1
SHEET 1 OF 2
INVOICE NO.: To Follow

REPORT OF: Centerville Parking Lot

PROJECT: Sand Coulee
Abandoned Mine Reclamation

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REVIEWED BY Kenneth D. Murnek

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NTL-C-07

Job No. 94-57 Date 1/4/95

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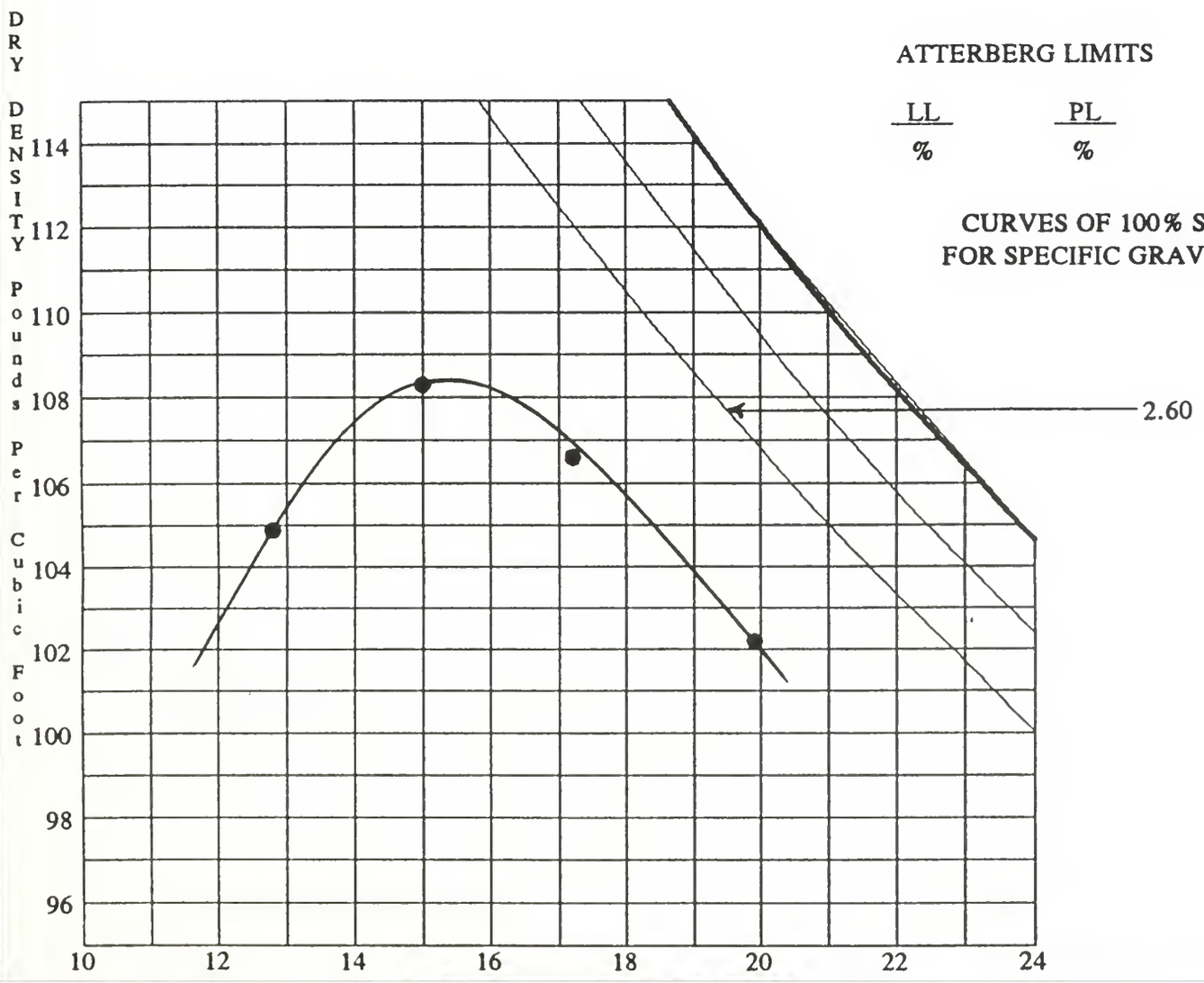

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REVIEWED BY Kenneth D. Manuel

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Job No. 94-57 Date 1/4/95

Project TETRA TECH INC. - SAND COULEE ABANDONED MINE RECLAMATION

Source of Material CENTERVILLE PARKING LOT

Lab No. 19648

Point ID and Depth SUBGRADE

Description of Material SANDY,SILTY SAND with GRAVEL (CL-ML) (CINDERS)

Test Method AASHTO T99 METHOD D

Rammer Type Manual, 5.5#

TEST RESULTS

Maximum Dry Density 98.2 PCF

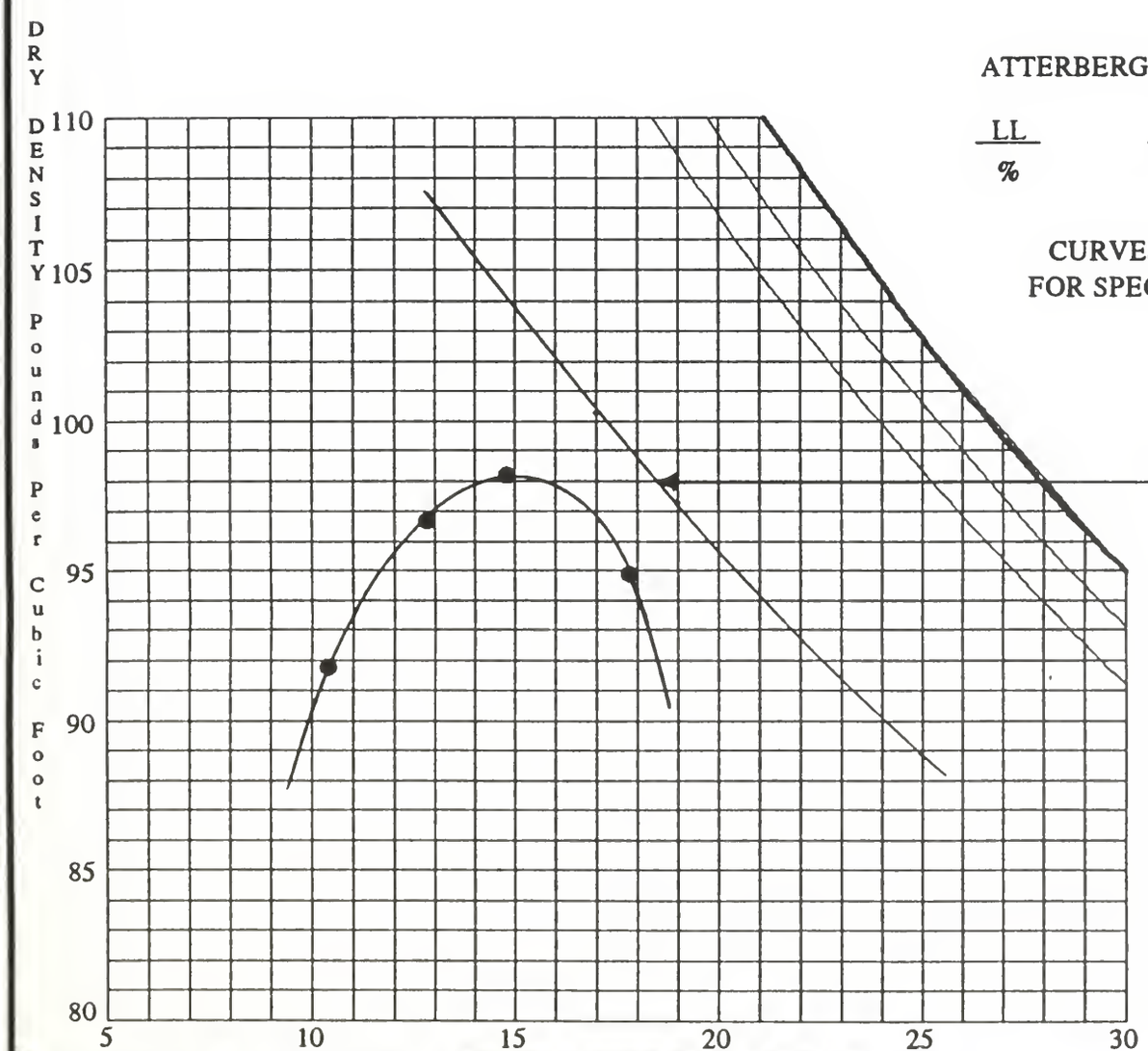
Optimum Water Content 15.0 %

ATTERBERG LIMITS

LL	PL	PI
%	%	%

CURVES OF 100% SATURATION FOR SPECIFIC GRAVITY EQUAL TO:

2.21



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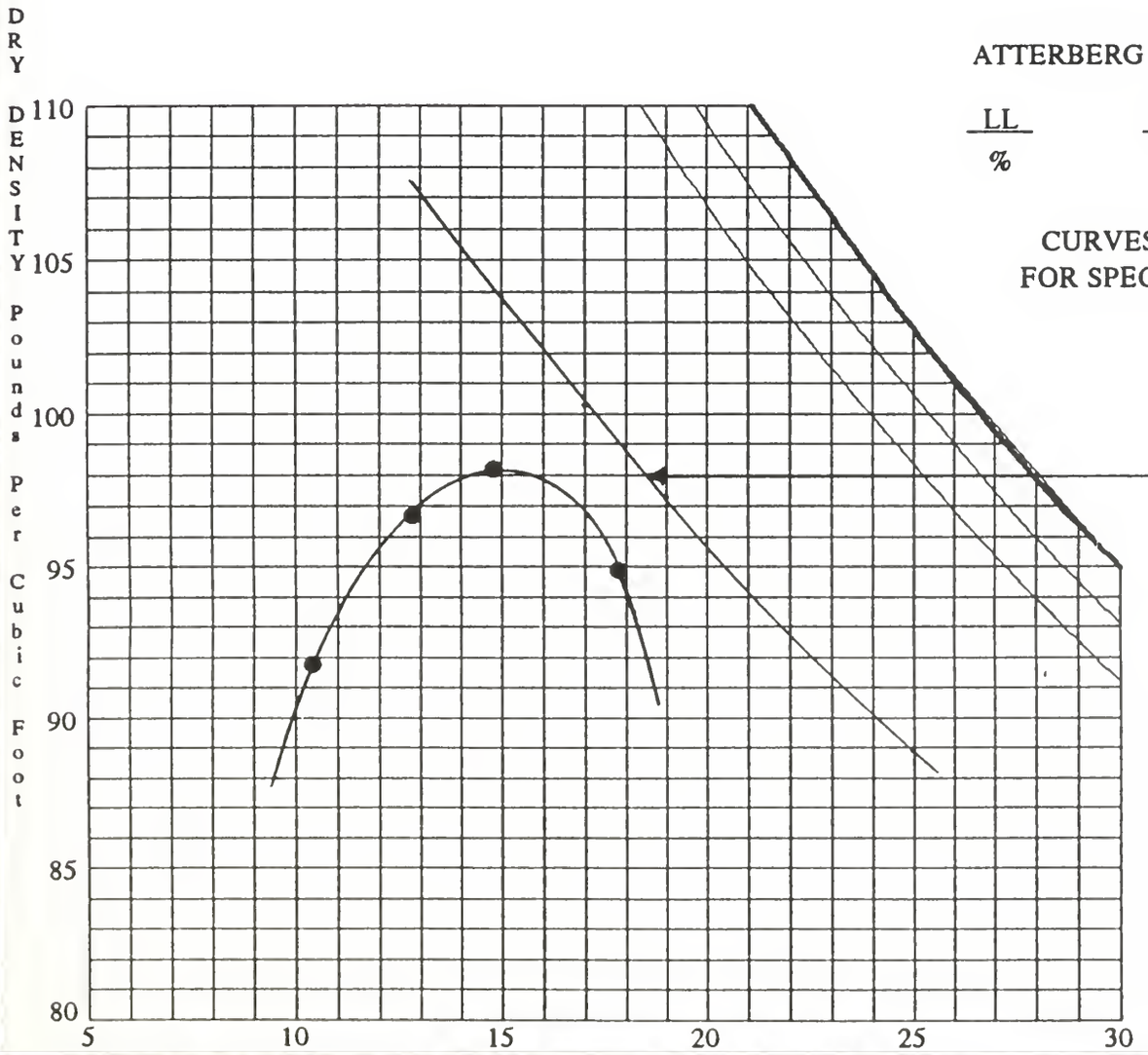

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